THE

JOURNAL OF GAS LIGHTING,

WATER SUPPLY, & SANITARY IMPROVEMENT.

Vol. XXII. No. 549.] LONDON, OCTOBER 7, 1873. [25th Year.] Price 1s.

RAMSAY'S NEWCASTLE CANNEL COAL. Analysis—10,000 cubic feet of gas per ton of coal; 26-candle gas; 13¼ cwt. coke per ton of coal.
The London Exhibition in 1851 was lighted with gas made from Ramsay's Cannel.
RAMSAY'S PATENT CONDENSED COKE.
DO. GARESFIELD COKE.

RAMSAY'S FIRE-CLAY ARTICLES. GAS-RETORTS, introduced 1828. FIRE-BRICK WORKS, established 1804. FIRE-CLAY SANITARY PIPES, CHIMNEY-TOPS, and all Goods made of Fire-Clay. The Fire-Clay is worked from Blaydon Main Colliery, is of excellent quality, and no expense spared in perfecting every article. The FIRE-BRICKS (marked "RAMSAY") are to be seen in all parts of the world, and the Works are the most extensive in the Kingdom.
Manufactories—Derwenthaugh, Swalwell, and Hebburn Quay, near Newcastle-on-Tyne; and London Wharves—Falcon Wharf, No. 80, Bankside; and Honduras Wharf, Cubit Town. Large stocks kept.
Address G. H. Ramsay, Newcastle-on-Tyne.

GEORGE GLOVER & CO.,
Patentees of the Standard Gasometers for the Government, and of the
IMPROVED DRY GAS-METERS.

These Meters are warranted to measure correctly and not to vary. Their acknowledged superiority has brought them into general use more rapidly than any Meters hitherto manufactured.
To meet the increasing demand, G. Glover and Co. have just entered on possession of extensive premises adjoining their present Works in Ranelagh Road, and they are now prepared to execute promptly, orders to any extent. They keep in stock all sizes of Meters up to 200 lights. In cases of haste, on the receipt of a telegram early on one day, their Meters can be delivered next day in any part of England, and in the large towns in Scotland.
Particulars and lists of prices forwarded on application to—
RANELAGH ROAD, PIMLICO, LONDON, S.W.;
238, GEORGE STREET, GLASGOW;
OR
15, MARKET STREET, MANCHESTER.

COWEN'S PATENT FIRE-CLAY RETORTS.
JOSEPH COWEN and CO.,
BLAYDON BURN, NEAR NEWCASTLE-ON-TYNE,
Were the only parties to whom a Prize Medal was awarded at the Great Exhibition of 1851, for "Gas-Retorts and other Objects in Fire-Clay," and they have also been awarded in the International Exhibition of 1862, the Prize Medal for "Gas-Retorts, Fire-Bricks, &c., for Excellence of Quality."
J. C. and Co. have been for many years the most extensive Manufacturers of Fire-Clay Retorts in the United Kingdom; and orders for Fire-Clay Retorts of all shapes and dimensions, Fire-Bricks, and every other article in Fire-Clay, are promptly executed at their Works as above.
COWEN'S GARESFIELD COALS.
Coal Office,
Quay Side, Newcastle-on-Tyne.

JOHN RUSSELL AND CO.,
THE OLD TUBE-WORKS, WEDNESBURY
AND
THE ALMA WORKS, WALSALL.
Established at the commencement of Gas Lighting.
Warehouses:
69, UPPER THAMES STREET;
COMMERCIAL STREET, SPITALFIELDS;
5, CHARLES STREET, SOHO; and
16, SOHO SQUARE,
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35, 36, 37, & 39, GRANBY ROW, MANCHESTER.
J. R. and Co. are the original manufacturers of Wrought-Iron Gas Tubes and Fittings, and Inventors of the LAP-WELDED TUBES for Locomotive and Marine Boilers.
J. R. and Co. make all kinds of Tubes and Fittings for Gas, Steam, and Water; Gun-Metal Cocks, Stocks, and Dies; Galvanised Tubes and High-Pressure Tubes, &c.
Lists may be obtained on application to
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JOHN BENT & SON,
WET AND DRY GAS-METER
AND
STREET-LAMP
MANUFACTURERS,
BELL BARN ROAD, BIRMINGHAM.
Established 1830.
All materials found for the alteration of Public Lamps for lighting with the Rod. Regulators with Lava Burners.

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Near Newcastle-on-Tyne.
WILLIAM COCHRAN CARR begs most respectfully to thank the Metropolitan, Provincial, and Continental Gas Companies for their patronage for several years past, and to intimate that he has rebuilt and enlarged his extensive premises for the manufacture of CLAY RETORTS; and that he is now prepared to execute the largest orders with punctuality and despatch. Orders for FIRE-CLAY RETORTS, of all shapes and sizes, FIRE-BRICKS, and all other articles in Fire-Clay, executed on the shortest notice, and on the most reasonable terms.
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SCOTTISH CANNEL COAL.
J. & W. ROMANS, Consulting Gas Engineers and Coal Factors, of Edinburgh and London, CONTRACT for supplying any quantity of COAL and CANNEL.
They are also Contractors for leasing Gas-Works, for supplying, erecting, or repairing gas apparatus and fire-clay goods.
Messrs. Romans, being lessees of several Gas-Works, have their Cannels tested in the ordinary working process, thus securing for their customers a guarantee beyond mere laboratory experiments.
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Coal, machinery, fire goods, &c., shipped to all parts of the world.

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LESSEES SINCE 1832.
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PRIZE MEDALS.
LONDON, 1851;
NEW YORK, 1853
PARIS, 1855.
(INVENTED & PATENTED IN 1844,)
COMBINING ALL THE LATEST IMPROVEMENTS,
PRIZE MEDALS.
LONDON, 1862;
DUBLIN, 1865;
PARIS, 1867.
MANUFACTURED ONLY BY
THE GAS-METER COMPANY, LIMITED,
238, KINGSLAND ROAD, LONDON, N.E.

MEDAL AWARDED, EXHIBITION, 1862, "FOR GOOD WORK."
THE IMPERIAL TUBE COMPANY, BIRMINGHAM,
MANUFACTURERS OF
WROUGHT-IRON TUBES & FITTINGS, BRASS & COPPER TUBES,
GALVANIZED & GLASS ENAMELLED TUBES & FITTINGS,
LAP-WELDED IRON & BRASS BOILER-TUBES, ETC., ETC.
Twyere Coils for Blast Furnaces, Boring Tubes, Core Bars, Gun-Metal and other Cocks, Boiler Mountings, &c.
HUGHES'S PATENT TAPS FOR HIGH PRESSURES.
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HENRY HOWARD & CO.,

COOMBS WOOD PATENT TUBE-WORKS,

OLD HILL, near DUDLEY,

MANUFACTURERS OF

HOWARD'S PATENT IMPROVED WROUGHT-IRON TUBES,

FOR GAS, STEAM, AND WATER;

Also ORDINARY WELDED WROUGHT-IRON TUBES and FITTINGS,

FOR GAS, STEAM, & WATER, EITHER BLACK, GALVANIZED, OR ENAMELLED.

CORE BARS FOR IRONFOUNDERS, STOCKS, TAPS, AND DIES, IRON COCKS, &c.

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ALBION TUBE-WORKS, BIRMINGHAM,

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For Gas, Steam, Water, &c.

SOLE LICENSEES AND MANUFACTURERS for the United Kingdom of

THE LAVENANT PATENT ENAMELLED TUBES AND FITTINGS.

LAP-WELDED IRON & HOMOGENEOUS METAL TUBES

For Locomotive, Marine, and Stationary Boilers.

Boiler-Tube Ferrules, Gun-Metal Gland Cocks, Water-Gauges, Whistles, &c.; Stocks, Taps, and Dies for Screwing, and Gas-Fitters Tools of all kinds.

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ALPHA TUBE & FITTING WORKS

R. LAIDLAW AND SON,

EDINBURGH AND GLASGOW.

Manufacturers of

CONSUMERS IMPROVED WET GAS-METERS,

THE UNVARYING WATER-LINE GAS-METERS,

IMPROVED DRY GAS-METERS, in Cast-Iron or Tin-Plate Cases;

STATION-METERS, ALL SIZES, up to 15 feet Square, with PLANED JOINTS;

Experimental Meters, Photometers, Pressure-Gauges,

Governors, Test Holders, &c., &c.

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THE MEDAL FOR 1862.

The only Prize Medal awarded for TUBES & FITTINGS.

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THOMAS PIGGOTT & CO.,

(Established 1822,)

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TELESCOPIC & SINGLE GASHOLDERS,

CAST & WROUGHT IRON TANKS FOR DITTO;

PURIFIERS, CONDENSERS, SCRUBBERS, RETORTS, VALVES;

IMPROVED WROUGHT-IRON RETORT-LIDS, CROSS-BARS, & SCREWS;

AND GAS APPARATUS OF EVERY DESCRIPTION.

SOLE MANUFACTURERS OF LIVESEY'S PATENT GASHOLDER MAN-LID,

By use of which Man-lid, inlet and outlet pipes can be examined and cleansed without loss of gas in crown of holder, or ingress of atmospheric air.

ROOFS, GIRDERS, BRIDGES, AND BOILERS OF ALL KINDS.

Drawings, Specifications, and Estimates supplied on application.

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PARIS, 1867.

CLASSES 24 and 53.

WILLIAM SUGG,

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LONDON, 1862.

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LAMP METERS AND BOXES

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TO ENGINEERS, GAS COMPANIES, RAILWAY COMPANIES, &c.

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GOVERNMENT PATRONAGE, ADMIRALTY & WAR OFFICE.

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AND

THE ANTI-GALVANIC PAINT.

THESE PAINTS ARE SPECIALLY PREPARED, and are most valuable for protecting and arresting rust on all ironwork, AND WILL COVER TAR EFFECTUALLY; they adhere strongly, acquire great solidity, do not crack, flake off, or blister by heat, and they resist the effects of SULPHUROUS AND GASEOUS EXHALATIONS.

They are used extensively at a large number of GAS-WORKS, on Gasholders, Purifiers, and all classes of Ironwork; also by Government, Railway Companies, &c.

Our CIRCULAR will be forwarded on application. SAMPLE CAN, for trial, sent free of charge.

Works: Brixham, Torbay, Devon,

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Established

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WORTLEY FIRE-BRICK WORKS,

NEAR LEEDS,

MANUFACTURERS OF ALL DESCRIPTIONS OF

FIRE GOODS, and Salt-Glazed Drain-Pipes.

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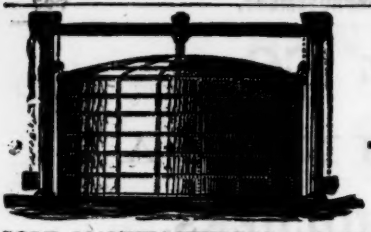
Wharf No. 4, inside Great Northern Goods Station, King's Cross, N.;

LIVERPOOL—1, Back Leeds Street,

Where is always kept a Stock of Retorts, Fire-Bricks, Terra Cotta Ware, and Drain-Pipes.



IMPROVED GAS APPARATUS,

FOR CITIES, TOWNS, VILLAGES, &c.,

INVENTED AND MANUFACTURED BY

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WHITESTONE IRON-WORKS, HUDDERSFIELD.

SOLE MANUFACTURERS of B. W. THURSTON'S IMPROVED SCRUBBER, CONDENSER, and WASHER, in use in many of the principal Gas-Works on the Continent.

PATENTEES of the IMPROVED COMBINED PURIFYING APPARATUS, so eminently adapted for Exportation.

ESTIMATES, PLANS, and SPECIFICATIONS PREPARED for BUILDINGS and APPARATUS.

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REFERENCES TO UPWARDS OF 300 GAS-WORKS.

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Successor to the late BENJAMIN WHITEHOUSE,

(ESTABLISHED IN 1765,)

BOILER AND GASHOLDER WORKS,

Westbromwich, near Birmingham.

MANUFACTURER OF TELESCOPE AND SINGLE GASHOLDERS,

WROUGHT & CAST IRON TANKS

FOR DITTO,

PURIFIERS, CONDENSERS, SCRUBBERS, HYDRAULIC MAINS,

And all kinds of GAS APPARATUS.

Wrought-Iron Roofs, Bridges, and Girders; Steam, Hot Water, and Range Boilers; Tanks, Cisterns, &c.,

And all kinds of Wrought-Iron Work.

DRAWINGS, SPECIFICATIONS, and ESTIMATES FURNISHED.

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ENGINEERS, IRONFOUNDERS, & CONTRACTORS,

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MANUFACTURERS OF

GASHOLDERS, PURIFIERS, CONDENSERS, SCRUBBERS;

ALSO OF

STEAM-ENGINES, EXHAUSTERS, IMPROVED PUMPS FOR TAR AND LIQUOR,

SLIDE-VALVES,

AND ALL DESCRIPTIONS OF APPARATUS USED IN GAS-WORKS.

PATENTEES AND MANUFACTURERS OF THE

DRY-FACED CENTRE-VALVES,

Which are now so extensively used.

During the last year these Valves have been introduced into some of the large gas-works in London, where they are giving the greatest satisfaction. Favourable reports have been received from the engineers of these and of some of the most important works in the kingdom. The demand for them both for home and foreign works continues unabated.

Every Valve is made with covering bars, to protect ALL the faces. The Patentees found the necessity for this almost immediately after they commenced the manufacture of these Valves, and they have ever since adopted the practice. The large experience they have gained has also enabled them to introduce several minor improvements in the construction of their Valves. It is an advantage peculiar to these Valves that the covers can be easily raised, the faces cleaned and oiled, and kept in perfect condition. If managers of gas-works will periodically attend to this, the Valves will be as good after twenty years use as when first put in.

Messrs. COCKEY AND SONS have been very successful in the erection of many gasholders, some of very large size. They erected, in 1871, at Dublin, for the Alliance Gas Company, one of the largest in the kingdom; telescopic, 182 feet 6 inches diameter. It was referred to by the Chairman of that Company the following year, in his report to the shareholders, as having been in use, and working most effectively, since its erection, and being in the highest degree satisfactory to the Company.

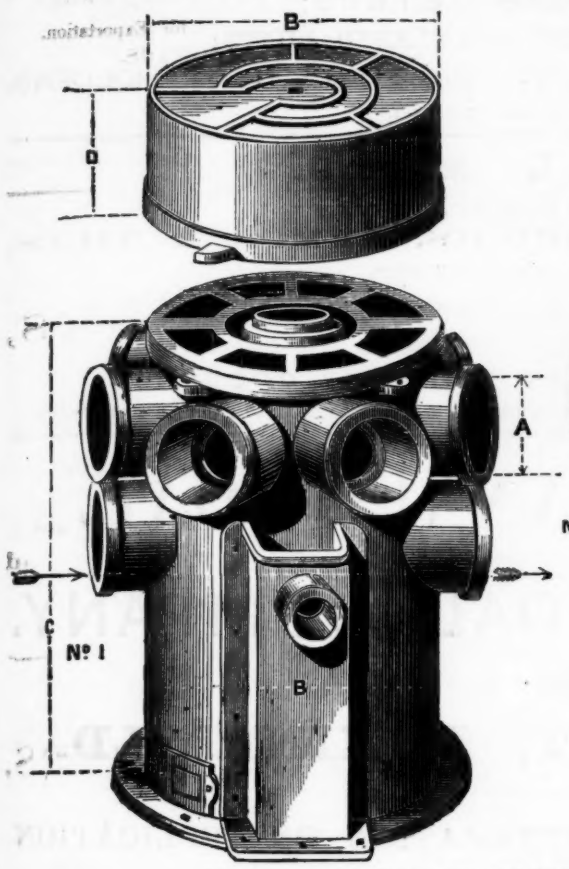
Plans of gas-works are carefully prepared, and every improvement which long practical experience can give is introduced into works entrusted to the care of the Advertisers.

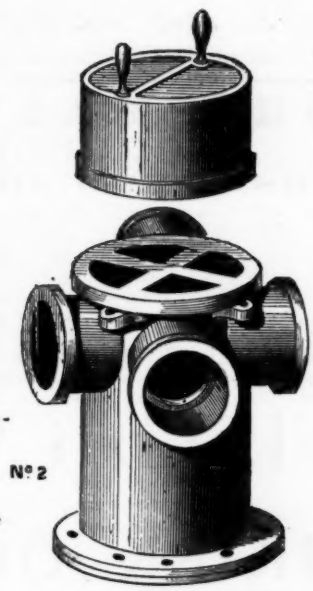
References can be given to the Directors of many Companies who have placed works in their hands, and who will testify to the satisfactory results of so doing.

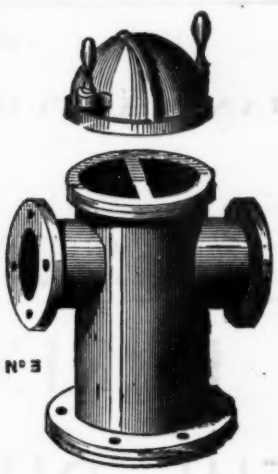
MESSRS. NEWTON, CHAMBERS, & CO.,

THORNCLIFFE IRON-WORKS, NEAR SHEFFIELD.

IMPROVED CENTRE-VALVES.







THORNCLIFFE IMPROVED BYE-PASS VALVE. SIZES FROM 3 INS. UPWARDS.

THORNCLIFFE IMPROVED STOP-VALVE. SIZES FROM 3 INS. UPWARDS.

Sizes of the THORNCLIFFE IMPROVED CENTRE-VALVE.

	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.
A. Bore of Pipe. . .	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 ..	12
B. Diameter of Body.	16 ..	20 ..	23 ..	26 ..	28 ..	31 ..	34 ..	40
C. Height of Tank .	33 ..	35 ..	38 ..	43 ..	46 ..	48 ..	51 ..	56
D. Depth of Cover .	8 ..	9 ..	10 ..	11 ..	12 ..	13 ..	14 ..	16
Total Height . .	44 ..	44 ..	48 ..	54 ..	58 ..	61 ..	65 ..	72

In all cases the Covers are cast heavy enough to resist any required pressure.

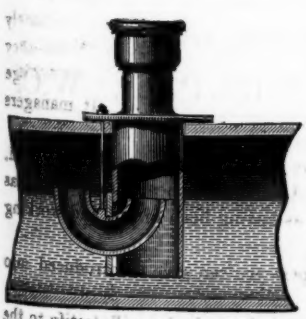
The advantages derived from the adoption of these Valves are so manifest and cardinal that in the immediate character of the change—the simplicity of the machine—the facility affording for cleaning out connexions between Valve and Purifier—the perfect collection and delivery by suitable overflow of the ammonia, at a greatly diminished depth from ground-line over the old form of Valve—the advantage of connecting on the same level, and at any angle, or opposite to each other, the inlet and outlet pipes without dip or rise—the clear acquisition of space in the purifying-house, by being able to place the boxes nearer together, the new Valve being entirely under the floor—and lastly, though of the greatest importance, the passage of crude and unpurified gas during the change is minimized to the merest fraction, thus preventing the fouling by impure gas the delicate machinery and easily affected exposed movements of the station-meter, thereby preventing the introduction of the enemy (unpurified gas) into the gasholder. Also a dead abutment is offered to all back pressure, imparting thereby to the gauges, governors, and hydraulic seals, a steadiness of action never realized with the once famous, but now fast becoming obsolete, Hydraulic Centre-Valve.

N., C., and Co. also Manufacture and Erect

PURIFIERS, CONDENSERS, SCRUBBERS, GASHOLDERS, ROOFS,

And every description of Gas Machinery.

TENDERS GIVEN FOR WORK FIXED COMPLETE IN ANY PART OF THE KINGDOM.



Messrs. N. C. & Co. are also the Sole Agents for

HAWKINS' PATENT SELF-ACTING DIP-PIPES.

These Patent Self-Acting Dip-Pipes are rapidly coming into general use by gas companies. By their use the whole of the pressure caused by the old kind of Dip-Pipes is entirely removed, therefore the yield of gas per ton of coal is considerably increased. They also act as a perfect safeguard against the deposit of carbon (or scurf) inside the retorts.

A saving of fuel is effected, and the wear and tear to the retorts greatly diminished.

They are also perfectly Self-Acting, they being regulated solely by the gas. They cannot get out of repair, and when once fixed, will last as long as the old kind, and can be easily adjusted should the hydraulic main sink; they can also be worked with advantage where there is no exhauster.

Testimonials can be had from Herbert Unwin, Esq., engineer of the Sheffield United Gaslight Company and the Penistone Gas Company. At both these companies works they have been in constant operation for several months. Further testimonials can be had on application to the Patentee, J. G. Hawkins, Effingham Street Gas-Works, Sheffield.

For Prices, &c., apply to

Messrs. NEWTON, CHAMBERS, & CO.,

THORNCLIFFE IRON-WORKS, near SHEFFIELD.

FLETCHER AND MURPHY,

GARRATT STREET WORKS, OLDHAM ROAD, MANCHESTER;

Manufacturers of

IMPROVED CONSUMERS WET GAS-METERS

IN CAST-IRON CASES,

THE UNVARYING WATER-LINE GAS-METER,

AND

IMPROVED DRY GAS-METERS;

STATION-METERS OF ALL SIZES, with PLANED JOINTS;

GOVERNORS, PRESSURE AND EXHAUST REGISTERS, TEST HOLDERS,

And all kinds of Experimental Gas Apparatus.

JOHN HALL & CO.

STOURBRIDGE,

MANUFACTURERS of FIRE-BRICKS, LUMPS, & TILES,

AND EVERY DESCRIPTION OF FIRE-CLAY GOODS.

N.B.—A Stock of 15 and 16 in. CIRCULAR RETORTS always on hand. Other kinds made to order on short Notice.

DUKINFIELD CANNEL COAL.

THE DUNKIRK COAL COMPANY.

OFFICES:

ASTLEY DEEP PIT, DUKINFIELD.

ANALYSIS, PRICES, AND OTHER INFORMATION, ON APPLICATION AT THE ABOVE OFFICES.

VICKARYS AND ROBERTSON,

Late JOHN VICKARY,

ESTABLISHED 1840,

GAS ENGINEERS, CONTRACTORS, IRON AND BRASS FOUNDERS,

WEST OF ENGLAND ENGINEERING WORKS, EXETER.

GASHOLDERS AND TANKS,

Retorts, Retort-Fittings, Condensers, Scrubbers, Purifiers, Station-Meters, Governors, Rack and Screw Valves. Gas and Water Mains always in Stock.

STEAM-ENGINES, EXHAUSTERS, SHAFTING AND GEARING, &c.

GAS-FITTINGS,

Including Chandeliers, Pendants, Hall Lamps, Brackets, Star and Sun Lights of all designs.

WET & DRY GAS-METERS,

Combining most recent improvements in principle and manufacture; upwards of 200,000 already in work, giving highest satisfaction.
(A guarantee of five years given with every Meter.)

PLUMBERS WORK, including Lift and Force Pumps; Cocks for Gas and Water and Steam; Brass Fittings.

HYDRAULIC AND GENERAL ENGINEERING

LONDON OFFICE: 8, JOHN STREET, ADELPHI, W.C.

TO INVENTORS AND PATENTEES.

MR. W. H. BENNETT, having had considerable experience in matters connected with Gas, Water, and Sanitary Improvement, begs to say that he continues to assist Inventors in the perfection of their designs, and to obtain for them PROVISIONAL PROTECTION, whereby their invention may be secured for Six Months; or LETTERS PATENT, which are granted for Fourteen Years.

Patents completed, or proceeded with at any stage, thereby rendering it unnecessary for persons resident in the country to visit London.

Patents procured for Foreign Countries.

Information as to cost, &c., supplied gratuitously upon application to the Advertiser, 42, Parliament Street, WESTMINSTER.

THOMAS PROUD,

Brookfield Works,

103, ICKNIELD STREET EAST, BIRMINGHAM,

MANUFACTURER OF

WOOD GRIDS

FOR PURIFIERS AND SCRUBBERS,

AND

CONTRACTOR FOR GAS APPARATUS & MAIN-LAYING.

TANGYE BROTHERS & HOLMAN,

LAURENCE POUNTNEY LANE, LONDON, E.C.,

SOLE MAKERS OF

MORTON'S PATENT SELF-SEALING RETORT-LIDS,

WITH

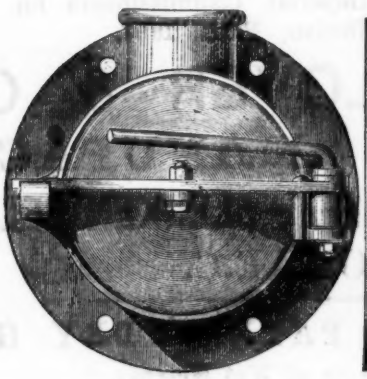
HOLMAN'S PATENT ECCENTRIC FASTENINGS.

OVER 7000 IN USE.

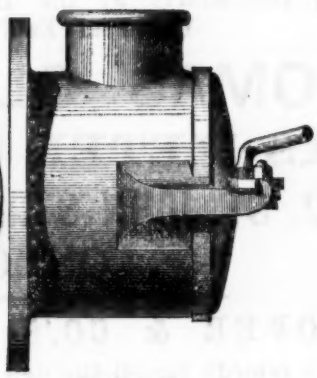
NO LUTING.

LIDS HINGED TO MOUTHPIECES; NO LIFTING ON OR OFF.

NO SCREWS FOR FASTENING.



FRONT VIEW.



SIDE VIEW.

SIMPLE.

ECONOMICAL.

DURABLE

EFFECTIVE.

NO DUPLICATE LIDS REQUIRED.

These Lids are proved by many eminent Gas Engineers to be the most efficient, saving much time, labour, and expense; are opened and closed as quickly and with as little trouble as an ordinary furnace door, and by their use the Retorts are soundly sealed during the whole period of carbonization.

THESE LIDS ARE ADOPTED BY THE FOLLOWING (AMONG MANY OTHER) GAS COMPANIES:—

The Gaslight Company, Beckton (where over 2000 are in use).
„ Gaslight Company, Bow Common.
„ London Gaslight Company.
„ Independent Gaslight Company.
„ Phœnix Gaslight Company.
„ South Metropolitan Gaslight Company.
„ West Ham Gas Company.
„ Imperial Gaslight Company.

The Gas-Works, Royal Arsenal, Woolwich.
„ Alliance and Dublin Gas-Works.
„ Edinburgh Gas-Works.
„ Manchester Corporation Gas-Works.
„ Salford Corporation Gas-Works.
„ Rochdale Corporation Gas-Works.
„ Liverpool United Gas-Works.
„ Birkenhead Gas-Works.
„ Birmingham Gas-Works.

The Nottingham Gas-Works.
„ Newcastle-on-Tyne Gas-Works.
„ Carmarthen Gas-Works.
„ Merthyr Tydfil Gas-Works.
„ Ystrad Gas-Works.
„ St. Alban's Gas-Works.
„ Over Darwen Gas-Works.
„ Aylesbury Gas-Works.
„ Cardiff Gas-Works.

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The following important Testimonial, among others, has been given:—

The Gaslight and Coke Company. Engineer's Office, 6, Westminster Chambers, Nov. 14, 1871.

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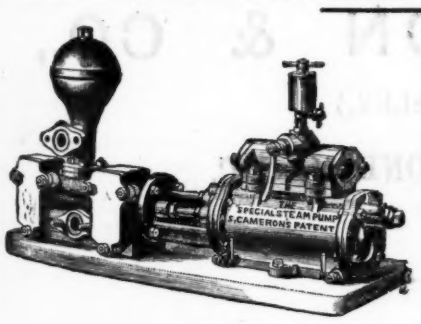

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„ Imperial „	6	Bradford	1	Dunstable	1	Maidstone	1
„ London „	1	Brentford	1	Eastbourne	1	Middlesborough	2
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„ South Metropolitan	1	Bristol	2	Forfar	1	Northampton	2
„ Western „	1	British Gas, Hull	1	Guernsey	1	Ogley Hay and Brownhills	1
„ Alliance & Dublin Conrs.	9	„ Norwich	1	Henley-on-Thames	1	Oxford	1
Aldershot	1	Burnley	2	Ipswich	3	Plymouth	1
Altona	1	Burslem and Tunstall	1	Jersey	1	Portsea Island	2
Arbroath	1	Bury St. Edmund's	1	Kingston-on-Hull	2	Preston	1
Aylesbury	3	Cagliari	1	Kingston-on-Thames	2	Reading	2
Banbury	1	Cork	1	Leeds	1	Richmond	6
Barnet	1	Darlington	2	Lewes	3	Rio de Janerio	1
Belfast	2						

Rochdale	1	Tonbridge	1
Rotherham	1	Tynemouth	1
Salford	6	Wandsworth	1
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TO CORRESPONDENTS.

No notice can be taken of anonymous communications. Whatever is intended for insertion, must be authenticated by the name and address of the writer; not necessarily for publication, but as a guarantee of good faith.

THE JOURNAL OF GAS LIGHTING,
WATER SUPPLY, & SANITARY IMPROVEMENT.

TUESDAY, OCTOBER 7, 1873.

Notes upon Passing Events.

THE proceedings of the British Association afford a number of points of interest, not only to the students of science, but to hard-working, practical men, who are, perhaps, amongst the most constant readers of these "Notes." Chemistry, as every observant holder of shares in gas companies knows, is producing a complete revolution in our imports of the vegetables used for dyeing. The extracts obtained from what where formerly amongst the waste products of gas-works have superseded several of the articles which at one time filled the lists of the produce brokers in Mincing Lane. It seems, from a report of our contemporary, the *Athenæum*, that another vegetable importation is threatened with fatal chemical rivalry. Madder is an important article in the "Dye Brokers "Price Current." Madder is grown in India, France, Italy, Holland, South Germany, and Turkey (hence Turkey red), and half the entire quantity grown has hitherto been used in the United Kingdom, the value having amounted a few years ago to upwards of £1,200,000. All attempts to grow the madder plant profitably in England have failed. The introduction of an artificial substitute is therefore a matter of great importance.

The colouring matter which is obtainable from the madder and its allied plants is valued especially for the ease with which calico and cotton fabrics can be dyed with it. Nearly all the pink, purple, and black colours seen on printed calicoes are obtained by its use; and, as the newly-discovered aniline dyes are more adapted for colouring silk and wool, the madder dye has, up to the present time, not been superseded, but has been gradually increasing in value. Now, however, this is likely to be changed, as the artificial production of the substance is steadily gaining ground. The colouring matter itself has received the name "Alizarine." This substance does not exist in the plant as such, but is the product of a partial decomposition. A substance named "Rubianic Acid," or, as Dr. Russell calls it, "Rubian," is found in the madder root, and this, on keeping, or treatment with hot water, splits up into alizarine and glucose. This alizarine has been examined carefully by several chemists, and its constitution had been pretty nearly made out some time before a thought of its artificial preparation had occurred. Two things are exceedingly striking in the history of this artificial colouring matter, as set forth in the address: the one is, the very great value which the atomic theory has to chemists, especially when building up new compounds, or endeavouring to recognize the relation which one group of compounds bears to another group; and the other, the great results which often accrue from this building up or synthetical mode of working. Without the help and guidance of the atomic theory, certainly no connexion would have been discovered between alizarine and anthracene, the hydrocarbon contained in coal tar, and now the source of all the artificial product. Great credit is due to our countryman, Mr. Perkin, for rendering the production of the artificial alizarine profitable. Graebe and Liebermann had certainly produced from anthracene a substance identical in every way with the natural alizarine, but this was only accomplished by the use of a costly re-agent—bromine—and if this had proved the only method of production, artificial alizarine would have remained simply a chemical curiosity. Mr. Perkin, however, was able to dispense with bromine, and to use one of the cheapest and most abundant of chemical re-agents—sulphuric acid—and thus the discoverer of aniline violet or mauve added to his other triumphs that of being the man to place in the hands of the manufacturer an abundance of a dye that had hitherto been expensive on account of its sparse cultivation.

The success attending the introduction of this artificial product is complete. The importation of natural madder is annually diminishing. The chemist competes with nature in the production of madder dyes; and it may be expected that sooner or later indigo will in like manner be superseded by the product of the laboratory. Whenever that takes place it will be a very serious thing for the maker of the Indian budget. Since the discovery that from benzole—the greater bulk of which is obtained from the tar of gas-works—all aniline colours can be obtained, the sale of what used to be an expensive waste material has become large and steady. Now, recent discoveries have shown other valuable extracts to be obtained from gas tar. The increasing demand for artificial alizarine, and its parent hydrocarbon, anthracene (also contained in tar to the extent of one per cent), will give additional value to the results of gas manufacture.

The section for Mechanical Science was presided over by Mr. W. H. Barlow, F.R.S, who took for the staple of his opening address, "*Modern Steel.*" Seventeen years ago, at a time when the iron trade produced considerable quantities of metal very inferior in quality as compared with charcoal-made iron, Mr. Bessemer (who is not, like Mr. Henry Cole, a C.B.) read a paper at the Cheltenham meeting of the Association, on the production and treatment of steel. The improvement of the manufacture was also taken up by Dr. Siemens and Sir Joseph Whitworth. By the by, the late Field-Marshal Sir John Burgoyne, in a letter printed in his ponderous, interesting, but absurdly lengthy "Memoirs," attributes Sir William Armstrong's success over Sir J. Whitworth, to his superior temper, tact, and literary ability. The question raised by Mr. Barlow was, "*What is steel?*"

We now have "Bessemer steel," "puddled steel," and "homogeneous iron,"—terms which themselves indicate the uncertainty attaching to the quality and properties of the new material. In 1850, according to the Jury Reports of the Exhibition of 1851, the total annual production of steel in Great Britain was 50,000 tons. At the present time the Bessemer process alone supplies upwards of 500,000 tons, the Siemens works at Landore 200,000 tons, besides further quantities made by his process at other works. This new material is now largely in use for rails and wheel tires, the duration of steel rails being variously estimated at from three to six times that of iron rails. Steel is used for ships plates and for the lining of the heaviest guns, whilst Sir Joseph Whitworth and Krupp make guns entirely of steel, though for these purposes the metal is of different quality and differently treated in order that it may withstand the enormous concussions to which it is subjected. Steel, again, is used for railway axles, crank axles for engines, in boilers, in piston-rods, in carriage springs, and for many other purposes. Notwithstanding these various employments of steel, there has been, and still is, a difficulty in applying it to engineering structures in this country. It was to this point the president drew special attention. A committee of the Institution of Civil Engineers conducted a series of experiments in 1868, and much valuable information was obtained. As for the "mild steels" of the Bessemer and Siemens-Martin processes, it may be taken as a result that this material is capable of bearing a strain of 8 instead of 5 tons to the inch, estimated for like purposes in iron. Taking the ordinary form of open wrought-iron detached girders, the limiting span in iron, with 5 tons to the inch, is about 600 feet; it follows that a similar steel girder capable of bearing 8 tons to the inch would have a theoretical limiting span of 960 feet, practically 900 feet. Take the case of the Menai Bridge, a work erected when the application of wrought-iron to engineering works was in its infancy, and when wrought-iron was the only available material for such a purpose; if this work had now to be constructed, and an open girder of steel were adopted in the place of plate iron, the weight of metal would be little more than one-third of that used, and the cost and time of erection would be materially reduced. The question then arises, why is it that, with all these obvious advantages, it is not more largely adopted? The reason is twofold: 1st, there is a want of confidence as to the trustworthiness of steel, in regard to its toughness, and its power to resist fracture from sudden strain; and 2nd, steel is produced of various qualities, and we do not possess the means, without elaborate testing, of knowing whether the material presented to us is of the required quality for structural purposes.

The Board of Trade require that, before a bridge is used for public purposes, their officer shall be satisfied of its security. Theoretically a very proper precaution. Practically the officers of the Board of Trade have neither the science nor the experience needful for settling what tests shall be applied to a new material, and therefore their influence is—like all Government interference in public works—purely obstructive. The civil engineers of bridges and girders find it easier to satisfy the Board of Trade by employing materials of needless weight than to go into investigations with them of the proper test for steel works. These difficulties arise because the Government omit or decline to make use of the vast store of scientific and practical knowledge existing in our institutions of civil and mechanical engineers, and putting their trust in military engineers (like poor Sir John Burgoyne, who was superseded in the military business he did understand by well-connected Guardsmen), who have to commence by learning a new trade. To be sure, criticism and objection without appeal is easy. Steel is not recognized as a proper material in substitution for iron by the Board of Trade.

No doubt some of the steel produced is what is termed "cold short"—that is brittle. Irregularity arises mainly from the difference of the chemical constituents and the various processes adopted by different makers. Be this, however, as it may, the Bessemer process, carefully conducted with ores and metal of suitable chemical constituents, produces a quality certain and regular in its results. The same may be said of the Siemens process, though there is not the same necessity for purity in the ore or metal, and tests can be applied during the process of manufacture which ensure regularity in the material turned out. Sir Joseph Whitworth employs intense pressure on the metal while in a fluid state, thus squeezing out the air-cells, and thus producing large and perfect castings of great ductility. Chemistry aids us but little, if at all, as a test for the quality of steel; and it is on mechanical tests we must

rely, and these engineers may apply for themselves; but such tests are not of a character which affords sufficient criterion that the metal possesses that degree of toughness which is necessary to resist the action of sudden strains.

The first step is to put testing on a systematic and satisfactory basis, and next to establish some means by which the metal when tested can have its quality indicated so as to be practically relied on. The president entered into valuable technical details in regard to these matters, adding, "All these materials are called steel, and have the same external appearance; but possessing, as they do, such a range of strength and such a variation in ductility, it becomes absolutely essential that there should be some classification or means of knowing the respective qualities among them. The want of such classification casts an air of uncertainty over the whole question of steel, and impedes its application. To this want of knowledge is to be ascribed the circumstance that many professional men regard the material as altogether unreliable: while large consumers of steel, in consequence of the uncertainty of the quality they buy in the market, seek to establish works on their own premises and make their own steel. This step has already been taken by one of the large railway companies, and is, as I am informed, contemplated by one of the principal constructive departments of the Government. Not only is a large and useful field for the employment of steel practically closed, but the progress of improvement in engineering structures is impeded both in this country and in other parts of the world where English engineers are engaged; for, in consequence of the impediments to its employment in England, very few English engineers turn their attention to the use of steel. They are accustomed to make their designs for iron, and when engaged in works abroad where the Board of Trade rules do not apply, they continue for the most part to send out the old-fashioned ponderous girders of common iron, in cases where the freight and difficulties of carriage make it extremely desirable that structures of less weight and more easy transport should be employed. We possess, said the president, in steel a material which has been proved, by the numerous uses to which it is applied, to be of great capability and value. We know that it is used for structural purposes in other countries—as, for example in the Illinois and St. Louis Bridge in America, a bridge of three arches, each 500 feet span; yet in this country, where "modern steel" has originated and has been brought to its present state of perfection, we are obstructed by some deficiency in our own arrangements, and by the absence of suitable regulations by the Board of Trade, from making use of it in engineering works.

In the section on Political Economy, the Right Hon. W. Forster, who has, in considering large questions, the benefit of a degree of sympathy with poor humanity in which very eminent statesmen are apt to be deficient, remarked that great as were the abuses of our poor law system in the creation and propagation of pauperism, the principle that no human being shall starve for want of work and wages had saved this country from evils which had on the Continent of Europe ended in slaughter and revolution, and landed numerous not otherwise unintelligent classes in all the wild fallacies of Communism. Up to the present time co-operation for distribution has had signal success, while co-operation for production has rarely succeeded, for two obvious reasons. In the first place, the wage-earning class are, from their education, impatient to divide all apparent profits, and not accustomed to look forward to that rainy day when, for a period, to keep the mechanical and living machinery together, work must be carried on at a loss. In the next place no great manufacturing concern can be carried on without heads of departments and discipline. Good heads are much more difficult to find, and, when found, to retain, than good hands. Discipline, where every workman is a shareholder, and Jack as good as his master, is not easy to maintain. But although these difficulties exist, there is every reason why working men who are inclined should try the experiment, which, if successful, must be for the benefit of the public. It is useless to declaim, or even reason, against combination for raising wages of mechanics or agriculturists. There may be amongst the multitude the pleasant idea that they can share the profits of good times and be none the worse off in bad times. Nothing but experience can teach them the futility of such expectations. The farmers, who have been combining and agitating amongst themselves for all sorts of legislative favours for forty years, are indignant that the labourers have taken a leaf out of the book of the defunct Protection societies; but in the end the pressure which will make the landlords provide more cottage accommodation, and deprive the labourers of the feeling that they have a right to obtain from the farmer, the parson, or the parish, any assistance they may require, will eventully place both employer and employed in a better position. The idea started by some literary socialists that wages are to be raised by a lowering of rents is absurd. Rents are low in England, and lowest on the greatest estates, where wages are highest.

A Mrs. King read an amusing paper at the British Association, from an American point of view of domestic service. Her theory was perfect if applied to suburban houses of say £25, £35, and £40 a year, according to situation; in a word, to all those establishments where one servant only, or one maid-of-all-work forms the domestic service. Look at the rows of small houses round the heart of London, inhabited by couples in income just above or not above the mechanic, whose wife cooks and does for him with or without the help of a nurse girl. Thirty little kitchens; thirty fires to boil a kettle or cook a bit of dinner; thirty servants to do the work that one good kitchener and four or five servants would do easily; thirty washes, employing as many fires and coppers, where one small laundry supplied with proper machinery would do the lot! A joint-stock oven and a peripatetic baker would supply the community with wholesome bread at a trifle beyond the market price of flour. Here is an opportunity for a builder with capital to make an experiment. One steam boiler might warm all the block except in the coldest weather. A gas apparatus would supply cheap fire for boiling a kettle or cooking a chop at any hour when the public kitchen was not open. Labour might be saved in a hundred ingenious ways, if tenants could be found, and, when found, agree. But every one who knows anything of the British female, in any rank of life, will be quite certain that in less than twelve months the community would be in the fiercest state of hostility; the head cook would be worried out of his life, and the wives, saved so much labour, would not be found improving their minds in the library, or cultivating their talents in the music-room. There is one fatal objection to anything like social joint-stock life amongst the middle and lower middle classes of this country—that is, the numerous indefinable castes of society. The dustman's wife despises the sweep's; the greengrocer's the dustman's; the stationer, the greengrocer; the druggist, the whole lot; while the banker's clerk's wife, starving on a large family and a pittance, will have nothing to do with tradesmen, being herself treated with the most haughty contempt by the doctor's wife, who happens to be the daughter of a poor parson. Mrs. King did quite right to ventilate the question, which she may more properly repeat at the Social Science gathering; but she must begin by educating the women of England into the possibility of forming a slight acquaintance without a violent friendship, to be followed by a violent enmity.

Lord Houghton is, perhaps, the most appropriate president the Social Science people could have, because he has the most perfect tolerance for everybody's hobbies. The ardent followers of the Comte de Chambord, of Gambetta, or the celebrated cantonal postman of Carthagena, would be received by Lord Houghton and listened to with equal courtesy. He would bear, without flinching, a discourse from Mr. Edwin Chadwick, and give fair play to that litigious gentleman who declares that the world is as flat as a chessboard. Of course, social science is all nonsense—nothing could be less scientific. But what's in a name when the thing is excellent? First, for our dull middle class an excuse for a journey—stars, in the shape of men known to fame, and a reason why for a great deal of miscellaneous hospitality; next, a safety-valve for crotcheteers and bores of all kinds, an opportunity of starting ideas that publicity will kill or cultivate; finally, a big Blue-book, in which some plums will surely be found. On this occasion the whole expense and trouble of setting the machinery of the Social Science Congress in motion would be well repaid by such a paper as that of Mr. G. W. Hastings on "Prison Discipline," full of valuable facts, and destroying several popular fallacies. Nonsense is talked, of course, at these meetings, as where is it not? but publication and discussion soon reduce to their true level the oracles of tea-tables and lecture platforms. We had selected a few of the plums of Mr. Hastings's paper, to reproduce for the benefit of many who, though interested in the subject, are frightened by columns of type; but the space at our disposal to-day prevents us from carrying out our intention.

Circular to Gas Companies.

As the time approaches for the deposit of Bills to be considered in the next session of Parliament, it behoves companies intending to apply for incorporation or further powers to think well over the question of a maximum price. There are many who believe that coals have now reached their highest price, and that it would be safe to calculate upon present data. We have no hope of more that a small reduction, and do not expect much further increase for years to come. It might then be safe to fix a maximum price upon the present actual cost of coal, but considering the temper of the Legislature, and, more especially, the peculiar views of Lord Redesdale, it would be difficult to get such a price without some qualifying provisions. The Gosport Gas Act, 1873, seems to us to offer a precedent which might be followed, notwithstanding the objectionable character of some of its provisions. It fixes a maximum of 5s. 6d. for 14-candle gas; but so long as the charge exceeds 4s. 6d. the company can only divide 5 per cent. This is of course an unjust restriction, but a limit of the kind is inevitable so long as the Gas and Water Works Facilities Act Amendment Act, 1873, remains unrepealed. The Act further provides that when the charge exceeds 4s. 6d. the local authority or ten consumers may apply to the Board of Trade to order a reduction; but, inasmuch as the local authority is obliged to appoint an auditor to act in conjunction with the company's auditor, an application of this kind is not likely to be required. We are not without hope that the Legislature may be induced to reconsider the provisions of the Gas and Water Works Facilities Act of last session, which are so obviously opposed to the just rights of gas companies.

If any illustration of the glaring inequalities and inconsistencies in gas legislation were wanted, it would be found in the fact that three large metropolitan companies may apply to the Board of Trade to fix a price which will enable them to pay 10 per cent. on shares entitled to that rate. But in the Gosport Act we find a maximum price coupled with a provision that while such price is charged the company shall only divide 5 per cent. At the same time machinery is provided for effecting a reduction of price, but none for obtaining an increase, if it should be necessary to enable the company to pay 5 per cent.

We are led to this subject by a perusal of the half-yearly report of the Chartered Company, which we publish in another column. This company, it will be remembered, applied to the Board of Trade, under the provisions of the City of London Gas Act, 1868, for a price to enable them to pay the maximum dividend, and obtained it—no thanks being due, for the Board were compelled to grant it. But what surprises us is that the Board of Trade, having thus had the rights of a gas company so forcibly brought to their minds, should, by the general Act they subsequently passed, have meted out such a different measure to the country companies, who are substantially as much entitled to 10 per cent. on their original capital as the Chartered Company. The matter must inevitably occupy the attention of Parliament in the coming session, and we hope the large metropolitan companies will lend their great influence towards obtaining for small country undertakings the measure of justice they have secured for themselves. We must heartily congratulate the Chartered Company on the results of the revision. A longer price, leaving a

larger balance after the dividends are paid, would have furnished a text for cavillers, whose mouths are now closed.

The application of the late directors of the Dublin and Alliance Company for a revision of price was very summarily disposed of by the Board of Trade, and it is left to the new directors to make a fresh application when they see fit. The causes which have brought this unfortunate company to its present condition are to us utterly inexplicable. It will be seen by the report, which we print in another place, that, charging 5s. 6d. for 20-candle gas, they are unable to pay any dividend for the past half year. In contrast to this state of affairs we may place the Liverpool United Company, who, charging 3s. 9d. for 22-candle gas, pay 10 per cent., and have a considerable balance. What can be the reason for this enormous difference in the case of two companies having nearly equal facilities for obtaining our prime material? A close examination of the accounts presented to the shareholders at the meeting reported in our columns to-day seems to us to support the allegation of gross mismanagement of the company's affairs. We have had no time to make such an analysis of the accounts as that we recently published of the metropolitan companies, but the few items we have gone into strike us as remarkable. In the first place, we find that the company have only sold a little over 6000 feet of gas for every ton of coal carbonized. This, of course, includes an estimate we have made of the quantity sold under contract and for public lights. Two things are alleged to account for this small sale—first, defects in the carbonizing apparatus, and consequently a small make; and next, excessive leakage. In the former we may say at once that we do not believe—at all events so far as the principal works are concerned; and, as regards the latter, we have no knowledge that the mains have ever been properly tested to ascertain the actual leakage. Comparable to the production of gas is the production of tar. Can it be defects in the carbonizing apparatus which produce only 5½ gallons, whereas similar coal distilled elsewhere produces about 10 gallons of tar per ton? Nor does the appearance of the accounts improve when we come to examine the individual items of expenditure. Why should wages at works come to 3s. 4·13d. per ton of coal in Dublin when the average of all the London works is only 3s. 2·45d. per ton? Not to mention salaries and collectors commission, which are greatly in excess of the average in London companies, we may say that almost every item works out to a larger sum than is expended in this metropolis. Thus it is seen that there is plenty of work for the new directorate to do in the way of close supervision and in the retrenchment we advised immediately after the Corporation Bill was rejected. We have no space to pursue the subject further to-day, and will only remark that we shall look forward with much curiosity to the day when the new directors will make another application for a Provisional Order, the granting of which must be preceded by a local inquiry involving a more thorough and complete investigation of the affairs of the company than they have ever yet received.

In the meantime, the Corporation of Dublin are again moving with a view to make a compulsory purchase of the undertaking, and Sir John Gray hastened from the meeting of the company to the meeting of the Corporation to advocate the purchase, if, as he said, in the true spirit of a popularity hunter, the ratepayers of Dublin desired the works. We have seen before that the directors of the company would have been only too glad to shake off their responsibilities to the shareholders, and get rid of a concern rendered almost unprofitable by mismanagement, in consideration of a life annuity of £100 each. But unless we misunderstand the ratepayers of Dublin, they are far too shrewd to allow any provision of that kind to appear in the new Bill. We should much doubt, also, whether, seeing the questionable success of the Corporation in the management of the water supply, they will be considered a body to be safely entrusted with the much more complicated business of a gas supply. A paragraph we print elsewhere shows that the engineers of the Corporation report a daily waste of over 6 millions of gallons of water. Now, since no Water Act in existence gives more ample powers for the prevention of waste than the Dublin Act of 1861, it follows that the Corporation can hardly have done their duty in allowing so long what Sir John Gray called "this monstrous waste of water, which "had cost the citizens so much money." When the full statement of the affairs of the Water Department, asked for by Mr. Dennehy, is furnished, we shall not be surprised to learn that the water undertaking is maintained at a very considerable loss to the Corporation, and the citizens of Dublin will be justified in suspecting that no better result may be expected from corporate management of the gas undertaking.

The metropolitan gas referees have issued their instructions for the six months—October to March. They have raised the sulphur maximum at all works, except Bow and Beckton, to 30 grains in the 100 feet, a limit which, we fear, cannot be maintained at some of the works. The referees have also altered the hours of testing; the first test is now to be made at 5.30 p.m., instead of 5 p.m. We see no reason for the change, which keeps the examiners at their posts half an hour later than before.

We give to-day, so far as we have been able to obtain them, the Provisional Orders applied for under the Gas and Water Works Facilities Act Amendment Act of last session. The Paisley Order, giving the Corporation power to raise the price to 6s. per 1000, has been granted without hesitation. The Dublin Order stands over. In the case of the Wrexham Company a local inquiry is to be held, the order being opposed by the Corporation. The applications of the Cork Gas Consumers Company and the Maryport Town and Harbour Company are still under consideration.

We publish in another place the order of the metropolitan gas referees in the matter of the application of the Paddington Vestry to them, under the provisions of the Imperial Gas Act, 1869, to prescribe and certify the mode of ascertaining the quantity of gas consumed by the public lamps. As this is the first application of the kind made, the order possesses some interest. The plan prescribed will, we believe, give satisfaction to all parties.

It seems probable that some meter system will be applied to the public lamps in the City of London. Mr. Heisch, the Corporation gas examiner, has tested a large number of the regulators affixed to the City lamps, and found that, with very few exceptions, they pass more than the contract quantity with the night pressure. The City pillars, we believe, are constructed to receive a small meter in the base, and if an average meter indication system be adopted, some agreement must be come to as regards the extra consumption in the unmetered lamps. The arrangement of the Imperial Company with the vestry of St. Pancras may be fairly followed. One great recommendation of the Nottingham system applied by the referees in Paddington is that, a large meter being used, the consumption of metered and unmetered lamps is equal, and the necessity for making an allowance for extra consumption in the latter avoided.

The invention of MM. Pelouze and Audouin, described and figured in another place, will, we think, be regarded with much interest by gas engineers. From the reports we have received of the results obtained by the original apparatus (a drawing of which we give) at one of the stations of the Paris Gas Company, there can be no doubt of its complete success. The apparatus was in operation continuously for three months without any superintendence, and on being examined after that time, it was found in as good order as on the day it was put up. Not one of the 454,500 holes, through which hundreds of thousands of cubic mètres of gas charged with tarry matters had passed, was found to be in the least choked. Test papers forwarded with the reports show that sulphuretted hydrogen is completely eliminated from the gas in its passage through the apparatus, and it is said that the amount of bisulphide of carbon is greatly reduced.

The principle on which the invention is based is as simple as the apparatus is efficacious. Assuming that the condensable matters carried along by the gas exist there in the form of vesicles, like water in rain clouds, the object is to break up the vesicles, and make them unite one with another until they form a drop which falls like rain. The apparatus seems to fulfil this object effectually. The removal of the sulphuretted hydrogen is accounted for by the intimate contact into which that gas is brought with ammonia. A new era in gas purification seems to be opened by the invention. Coke condensers are unnecessary, scrubbers to a great extent, if not altogether, are avoided, while much, if not most of the expenses of purification are saved. And then the apparatus occupies such a small space that it will be a perfect godsend in crowded works. The Paris Company, we are informed, have ordered the apparatus for all their works, and many orders have been received from provincial undertakings.

The Corporation of Manchester propose to raise the price of gas 5d. per 1000. The council, it seems, require the Gas Committee to make a profit of 10 per cent., and advances have been made to the Improvement Commissioners in anticipation of profits which have not been realized. There is some talk also of applying to the Board of Trade for a Provisional Order, and we shall be curious to see what the Board will say. We have repeatedly urged that the gas consumers of Manchester are unfairly taxed, and this additional charge may perhaps rouse them to make remonstrance.

The Corporation of Limerick, having saddled the rates with a charge of £33,000 on account of their gas undertaking, are now anxious to dispose of it, but express a hope that a "home" company will purchase and carry it on. The hope is delusive. No sensible man is likely to embark his capital in the undertaking, which must by a natural law fall into the hands of the United General Company, and so will end another case of corporate competition with a company.

The Gas Committee of the Corporation of Halifax propose to raise the price of gas from 3s. 8d. to 4s.; but their report has been sent back for reconsideration.

Communicated Article.

LEAKAGE.

By T. H. Methven, Bury St. Edmund's

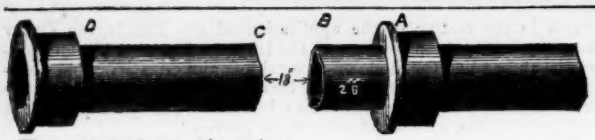
(*Continued from page* 837.)

In our last article the plan was pointed out by which leakage could be ascertained. Now we have to show how it can be stopped.

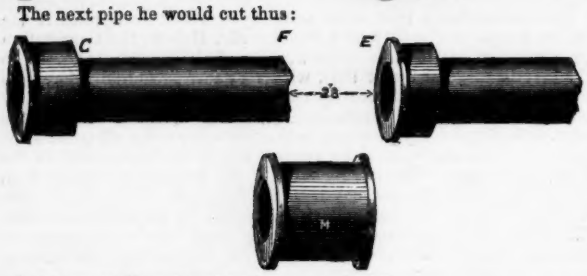
Supposing the connexion to be made and the full pressure applied—if possible, at least, obtain 3 inches—start the minute clock and observe the registration for one minute; then cut off all the dead services at the main; then observe the consumption; next examine the joints of the mains. This can be done by making excavations 9 feet apart. If, when the leaky joints are stopped, there is still leakage, begin and disconnect the services and plug the holes in the main; if the disconnexion of any of these services causes the meter to go more slowly, it follows that the leakage is in that service; take it up and renew it throughout. Keep on in this manner until the leakage is reduced to 1½ foot for every 200 yards.

The meter should not be removed until the joint at the opposite end of the main has been made, and that joint, as well as the pipe already repaired, has been retested throughout. Care should also be taken to see that all the main taps are shut when the tests are made.

In cutting the pipe in the street, 18 inches are wasted in order to allow the meter to be inserted. A careful main-layer will so arrange as to cut the first pipe thus:



The next pipe he would cut thus:



and each succeeding pipe after the same principle.

It will be seen that the piece A B will just fit into the opening E F, and prevent a new pipe being cut to make the joint with the double collar M.

The following are the actual results of the investigation into the leakage of 5½ miles of main recently overhauled by the writer, the pressure during the testings being 23-10ths. In no case was any smell perceived in the streets:—

Name of Street.	Size.	Length.	Services.	Leakage	Leakage after Repairs.	Remarks.
	Inches.	Yards.		Feet.	Feet.	
1.....	8	160	None.	24	Nil.	One joint badly run and afterwards cemented with Portland cement, which had given way all round.
2.....	6	100	13	3	1	One service worn out. Two defective main-taps at meters.
3.....	6	532	29	14	3	One hole in main, services generally worn out, and four main-taps at meters leaky.
4.....	3 and 4	170	15	4	1	All dead services were cut off before main was tested.
5.....	4 and 3	230	15	16	2	Joints generally bad, short of lead, and improperly set up. Several dead services leaky, and all services badly connected.
6.....	3	160	17	12	2	Same as above.
7.....	3	150	9	12	1	One service worn out, one hole in main, and joints at branch very badly made.
8.....	2	500	9	6	3	Leaky lamp-taps, and bad joints at branch.
9.....	3	200	6	9	2	Joints improperly set up, and main broken.
10.....	3	330	10	3	1	Ditto, and one lamp-tap leaky.
11.....	2 and 3	515	34	30	3	A great many dead services leaky, and live ones worn out. Services driven into main, not tapped.
2.....	3 and 4 odds & ends.	220	9	10	2	Joints improperly run, and badly set up. Main broken where one service was tapped in.
13.....	4	680	72	24	2½	18 feet per hour were going at a bad lamp service. One or two dead services leaky.
14.....	2	450	33	6	2½	Bad joints at branch.
15.....	2	475	16	16	2½	Bad joints on main. Services leaky. Lamp-taps bad.
16.....	3	400	15	42	5	3-in. main very badly laid. Joints short of lead and not set up.
17.....	4	200	33	10	6	All the services are more or less worn out. A great many new ones were put in, and the others we were compelled to leave to a future time.
18.....	4	210	28	10	3	Same as above.
19.....	3	600	40	7	5	Joints leaky, but so small at each one, that nothing could be done but stripping the main right through and setting them all up. This was not considered necessary
20.....	2	450	22	6	3½	All this was in the dead services.
21.....	3	110	23	1	1	Not done anything to.
22.....	3 and 2	610	19	23	6	Main broken in two places, and bad services.
3.....	4 and 2	750	39	45	7	Main broken in two places.
24.....	3	500	51	50	6½	Most of this was in the 1-in. service.
25.....	6	99	11	13½	1	Bad joints on main. Services not tapped, but driven in.
26.....	6	115	10	2	2	Not done anything to.
27.....	4	130	—	—	2	This was not tested separately at first. The leakage is included in the 13½ feet above.
28.....	4	60	3	1	—	Bad joint at branch.
29.....	4	110	21	7	2½	One or two worn-out services, and one joint not set up.
30.....	4	150	9	17	3	Joints at branch very badly made. Lamp-taps bad, and service worn out.
31.....	6	130	33	16	2½	Two bad services, and one hole in main.
32.....	6	133	24	4	1	Services improperly connected.
		9626	666	440½	85½	

Now as to cost, which is an important matter. The above 5½ miles of mains, with the necessary renewals of main, double collars, and service-pipes, were executed at about £50 per mile. It will be noticed that the work from No. 15 to No. 26 was not so thoroughly done as the rest. This arose from the necessity of hastening the work for the consumers convenience. Their grumbling at the cutting up of the streets, and obstruction of traffic, postponed part of the repairs to a more suitable time.

One of your correspondents has very properly said "the real test of good working is the quantity of gas *paid for* per ton." Of course the quality of coals carbonized must also be taken into account in the comparison. It matters little what gas is made, if it never reaches the ledger. In our last article it was stated, that the gas from 12 tons of coals was a reasonable amount for the annual leakage from one mile of mains. In round numbers this would be 100,000 feet per mile per annum.

Presuming the make per ton to be 9500 feet, and that one million cubic feet of gas were supplied per annum to consumers from one mile of mains, the quantity of gas sold per ton of coals would be 8700 feet.

But if 2 millions were sold from the same mains, and the leakage to remain stationary, 9000 feet would be sold; and if 3 millions, the sales per ton would be increased to 9300 feet.

It is therefore evident that every town should be judged by its own peculiarities. Another element has also to be considered—namely, the number of services on the mains. Some gas companies have large consumers near to the gas-works, as well as the ordinary number of consumers throughout the town. These should not be judged by the same rules as those in which the consumers are small and far apart.

To form a fair comparison of the leakage, the leakage per mile, the number of services, as well as the consumption of gas per mile, should be taken into consideration.

Reduction of leakage is more difficult than one would suppose it to be, and requires not only a considerable outlay, but a careful and almost specially educated main-layer to undertake the work. Very few men have the patience and care necessary to undertake it successfully; none but a good workman should be employed. The manager or some suitable person—not the main-layer—should see the last testing, and make sure that the full testing pressure is applied when the experiment is being made.

Let each gas manager try the leakage in a few streets under his care, and he will be convinced that it should be reduced, and that the necessary outlay will soon be repaid.

There never was a better opportunity than the present for pressing this subject upon his directors, as, from the high price of coals, dividends have been reduced, and, in many cases, might be again increased, if directors would only turn their attention to leakage.

Review.

MR. PATTERSON ON GAS PURIFICATION.*

It is with much reluctance that we call our readers attention to the reports of the late referees on the Sulphur Question, but it seems to us necessary for the proper appreciation of this pamphlet. The first report is dated July, 1870, and was issued about two years after the appointment of the referees. At this time they were in a state of uncertainty as to the form in which "sulphur" exists in coal gas.

"It is commonly said," they wrote, "to exist in the gas as bisulphide of carbon, but the referees have reason to believe that whatever proportion of the impurity may exist in this form, it also does so in other forms," an opinion in which all who have studied the question concur. And then as to the means of eliminating the impurity they wrote as follows:—"It is an easy matter to rid gas of any impurity which is either an acid or an alkali, but in whatever form, or forms, the sulphur impurity exists in the gas, it is certainly a *chemical neutral*, and hence one of the obstacles to catching it." In 1870, therefore, Mr. Patterson regarded bisulphide of carbon as a neutral body, and considered its neutrality an obstacle to its elimination. Two years afterwards (1872) came the report "On Sulphur Purification at Beckton," and by this time the referees had got well abreast of our knowledge of sulphur purification. We need make but one quotation from this report: "From experiments which they have made, they (the referees) can state that lime in the form of sulphide of calcium (*i.e.*, saturated with sulphuretted hydrogen) is a perfectly adequate purifying agent for 'sulphur.'" Bisulphide of carbon, we rather think, is not once mentioned in this report. Here, too, we find the first mention by the referees of the greater affinity of carbonic acid for lime, which causes the expulsion of sulphuretted hydrogen from sulphide of calcium.

It has been said repeatedly in these columns that both the facts here referred to—viz., the superior affinity of carbonic acid for lime, and the efficacy of sulphide of calcium in the removal of bisulphide of carbon—were well known, and to-day we are challenged to give proofs. Mr. Patterson, who is a most diligent reader, tells us that, having searched, he could find no book or paper in which any mention was made of the superior affinity which CO_2 has for alkaline substances compared with SH_2. He overlooked the very first book a chemist would have gone to—the best chemical compilation in existence—Gmelin's "Handbook." If he had consulted that work, he would have read in vol. ii. (published in 1849), and at page 226, the following statement:—"Acids added in small quantity, even the weakest, such as *carbonic acid*, convert the simple alkaline hydrosulphates into bihydrosulphates; and, when added in larger quantity, *expel the whole of the hydrosulphuric acid* from the latter." If, again, he had consulted the JOURNAL OF GAS LIGHTING for 1854, he would have found a series of papers on the "Chemistry of Gas Lighting," by Mr. Lewis Thompson, in one of which (J. G. L., vol. iii., p. 24) he would have read the following:—"the centres of these nodules (of lime) can never be brought into contact with the gas without at the same time exposing the sulphuret of calcium on their outer surfaces to the action of the carbonic acid of the gas, by which, of course, decomposition would be induced, *and the sulphuretted hydrogen driven from one purifier into another.*" Coming to more recent times, the "Proceedings of the British Association of Gas Managers for 1866" (p. 10—J. G. L., vol. xv., p. 490) shows that Mr. Mann, of the City Gas-Works, was employing carbonic acid to drive off the sulphuretted hydrogen from foul lime, and Mr. Livesey was doing the same thing to desulphuret ammoniacal liquor. We might multiply these quotations if it were necessary, but the above are sufficient to prove that gas managers were cognizant of the fact that carbonic acid expelled sulphuretted hydrogen from sulphides.

We come next to the absorption of bisulphide of carbon by sulphides. It is quite true that most of what we know of the compounds of bisulphide of carbon with the sulphides of the alkalies and alkaline earths was taught us by Berzelius, but we believe his researches were made years before 1848. We have quoted the opinion of the referees, written in 1870, that the bisulphide is a neutral body. In Fownes' "Manual of Chemistry," Ed. 1848, p. 209, however, it is said: "Bisulphide of carbon is a sulphur acid; it forms crystallizable compounds with sulphide of potassium, which is a sulphur base." Furthermore, we read in the second volume of Gmelin's "Handbook," p. 228, directions for preparing alkaline sulphocarbonates. They are as follows:—"A simple

* "Gas Purification in London; including a Complete Solution of the Sulphur Question." By R. H. Patterson, late Metropolitan Gas Referee. Blackwood and Sons. 1873.

alkaline hydrosulphate is brought in contact with bisulphide of carbon in a close vessel [Berzelius might have written, a scrubber]; the sulphide of carbon quickly dissolves, forming a brown solution." The first alkaline sulphide employed to remove bisulphide of carbon from gas was sulphide of ammonium in the form of liquor, and how effectually the object is accomplished is well known. We believe we may say with truth that the promoters of the Metropolis Gas Act, 1860, fixed upon the sulphur maximum of 20 grains from a knowledge of the fact, that by the use of liquor the "sulphur" could easily be kept below that amount. As regards the use of other sulphides, we may refer Mr. Patterson to the JOURNAL OF GAS LIGHTING for 1866 (vol. xv., p. 70), where he will find some discussion relative to the patent of Wood and Barrett, which proves that the action of sulphides in removing bisulphide was well understood. And again, not to multiply quotations, we may lastly refer him to the "Proceedings of the British Association of Gas Managers for 1870"—two years before the Beckton report was published—in which, at p. 89, he will find, in a communication by Dr. Letheby, the following statement relative to the mode of purification at the Great Central works:—"The gas is then passed through a series of dry lime purifiers, which present a large surface for absorption, and the lime is purposely left in the purifiers after it has become foul, and until a good deal of the sulphuretted hydrogen first absorbed *is displaced by carbonic acid.* In this manner the natural affinity of sulphide of calcium for bisulphide of carbon is permitted to act, and much sulphur in this form is retained." (J. G. L., vol. xix., p. 657.)

The quotations we have made above suffice to show what an awful waste of thought and ingenuity was involved in the production of the following paragraph, which we quote from Mr. Patterson's pamphlet:—"Secondly, as bisulphide of carbon is *an acidulous body*, it occurred to me that it might be absorbed and removed from the gas to some extent by alkalies, such as soda, lime, and ammonia." [Berzelius had said that bisulphide of carbon dissolves in aqueous solutions of the fixed alkalies. Gmelin, vol. ii., p. 204.] "I found that this was the case. Lime, so far as I have tried it, produced little or no effect upon the bisulphide of carbon; but a solution of soda used in a scrubber in three experiments reduced the amount of sulphur in the gas from 25 grains to 15, 17, and 19 grains respectively. Accordingly, I felt convinced, before making a single experiment, that if I combined sulphur with alkalies I should have a material which would perfectly suffice to remove the sulphur impurity from gas."

We must here do Mr. Patterson justice, and repeat an opinion we have expressed before, that he is the first who proposed to purify gas by scrubbing with soda and sulphide of sodium solutions—a process which we believe would be found effective and cheap, and unproductive of nuisance. He complains, in the letter we publish to-day, that we have not noticed his ammonia process, but there is really no occasion to do so. It is all as old as the hills. Ammoniacal liquor has been used in all conceivable states—sulphuretted, supersulphuretted, as we may say carbonated and decarbonated or caustic—and in every state has been found more or less efficacious in purification. No doubt the author's plan is good, but there is nothing novel in any part of it, though the combination may be original.

Our space is exhausted to-day, and we have occupied it more in reply to our author's letter than in a notice of his pamphlet, to which we may again have occasion to refer. We may, however, at once offer an opinion, from which many will dissent, that the gas world is, after all, somewhat indebted to Mr. Patterson. His habits of thought as a political economist, rather than his knowledge as a chemist, helped him to a right understanding of the apparently complicated but really simple process of gas purification; and if his deductive method only led him to the discovery of previously known facts, we are bound to say that his reasoning upon those facts placed him far in advance of some gas managers. His mistake was in patenting his discoveries. If instead of rushing to the Patent Office he had attended the earliest meeting of the British Association of Gas Managers, and there expounded his views on purification, he would have gained immense *kudos*, and for profit he would certainly have been a gas referee to this day, while his patent, we expect, will never produce him a farthing.

Correspondence.

ARMSTRONG'S LAMP PHOTOMETER.

SIR,—In reading over the description of this apparatus, I observe that, by some mishap, the last paragraph is incomplete. The last sentence should be as follows:—"The disc being adjusted to the vanishing point, the consumption of oil complete, and the time and gas consumed noted, the per centage value of the gas is easily determined; also, the candle value in grains of oil being previously fixed, the quantity consumed divided will give the answer for candles."

43, *Manchester Street, Argyle Square, Sept.* 29, 1873. H. ARMSTRONG.

UNACCOUNTED-FOR GAS.

SIR,—In reply to Mr. Emmerson, the "means of discovering the precise number of feet lost in escapes from joints, &c.," was an ordinary test meter, applied first to the whole district, then to the several portions into which it was cut up. Each leak, as found, was stopped and tested, the difference between that and the previous test being noted. The work proceeded till the whole was made sound. Hence the amount of leakage was correctly apportioned to each part of the distributory plant.

In my published results it will have been noted that "matters of detail, as station-meter, temperature, gasholders, and public lamps," do not affect the loss shown. In urging too strongly the necessity of "giving heed to those matters of detail," a grave reflection may be cast upon the general body of gas engineers and managers. There are exceptions, doubtless, and varying degrees of attention given according to men, staff, and machinery; but, on the whole, the ordinary general routine is much the same.

I again repeat that in "the exhaustive discussion" no facts were adduced nor indications made as to where the leakage is to be looked for—nothing but "mere guesses." It could not be denied there is considerable loss, and it had to be admitted that it must arise from something, but we must dig deeper than this discussion for leakage—to the mains and services of past times—and we shall there discover, as I have attempted to show, a considerable portion of unaccounted-for gas. At the Liverpool meeting of the British Association of Gas Managers I stated that "I had tested some old mains before they were taken up, and that, with an inch pressure, the leakage on 100 yards was something like 10 feet in 9 minutes. In 1869, the same year, Mr. Studholm, of Whitehaven, wrote to me thus: "I examined a district in this company's work, and found that in a 2-inch main 100 yards long and 12 services the loss was 8 feet per hour with 8-10ths pressure."

At our last meeting, too, I gave another instance of leakage on mains and services—90 feet an hour with 15-10ths pressure.

I may add that the arrangement described by Mr. Methven for testing the mains is the same as I have employed for the work for some considerable time; Mr. Studholm's letter also has a sketch of the same.

I feel assured that if a system is adopted for *thoroughly* and *periodically testing* the *mains, services*, and *meters*, the normal minimum of loss will be considerably reduced.

I give another case of good main-laying, to be added to Mr. Methven's list—900 yards of 18-inch main from the Shields works stood 24 hours under a pressure of 6 inches, without the least indication of loss. W. J. WARNER.

South Shields, Oct. 1, 1873.

SIR,—To ascertain the particulars Mr. Emmerson requires—

1. Attach a meter to the main under examination, and ascertain the gas passing through it when all the main-cocks are shut.
2. Attach new main-cocks and test the main; the difference between the two leakages is from main-cocks.
3. Replace the old lead services by new ones, or make each one tight, and test the main; the difference between leakage Nos. 2 and 3 is from lead services.
4. Examine and renew or make tight every iron service and test the main; the difference between leakage Nos. 3 and 4 is from the iron services.
5. The remaining leakage is from the main.

I am not sure whether Mr. Warner adopted the above plan; it is one I have tried with success. M.

TAR FUEL.

SIR,—Feeling a deep interest in whatever affects the prosperity of gas-works, I send you the following, which may be of interest to some of the fraternity.

For 15 months past we have been successfully burning the tar made at our works under our retorts, and find a handsome profit by so doing. We find that every gallon of tar is worth, as fuel, under the retorts, about two-thirds of a bushel of coke; and, in addition to that, the make of gas is two to three tenths of a foot more per pound of coal while burning tar than when using coke. This last we believe to be owing to the high and steady heat produced by the uniform tar fire.

Every gas-works, large and small, and especially the small works, have an interest in utilizing the tar made to the best advantage. Some companies may have a sale for tar, at a price as good, or better, than burning it under the retorts, with the benefits above mentioned; others have little or no use for it, and find it a nuisance, while every company has sale for all the coke they can make. It cost us about £10 to fit up with the proper appliances for burning tar with the results above mentioned; and, for the same expense, every gas company, large or small, may do the same.

CHARLES NETTLETON, President, East Chester Gas Company.

117, *Broadway, New York, Sept.* 12, 1873.

GAS PURIFICATION IN LONDON.

SIR,—The notes on the events of the day in your "Circular to Gas Companies" are necessarily so brief that I cannot complain that, in your noticing my pamphlet, you should have made no mention of my process for purifying gas *entirely* by means of the ammonia contained in the gas itself—a process so simple and economical that I cannot doubt that it will ere long be widely adopted, especially since the rise in the price of coal has rendered new methods of economy in gas manufacture indispensable, to prevent a serious reduction in the dividends payable to the shareholders of gas companies.

You have confined your remarks to my new process of using lime in purifiers, which is the only one of my several processes of which the originality is contested. As, with the impartiality which befits so important a journal as yours, you are always ready to give room for fair discussion, I crave permission to offer some remarks on this question, at the same time apologizing for occupying so much of your valuable space.

In the pamphlet I describe my process of employing lime in purifiers thus:—

My process consists in employing the first *vessel* or *vessels* of the series in such manner that the carbonic acid is not only arrested in these vessels, but is made to expel the sulphuretted hydrogen at first absorbed along with carbonic acid by the lime in those vessels—whereby the sulphuretted hydrogen thus driven forward with the gas will be absorbed in the subsequent vessels, converting the lime in these latter vessels into sulphide of calcium, which is an efficient material for purifying the gas from bisulphide of carbon.

As here stated, I leave it optional whether the first purifier only, or more than one, is to be employed in the decarbonating process; and I also describe the circumstances which ought to determine what proportion of the vessels are to be used for absorbing CO_2 and driving forward SH_2, and what proportion of them are to be employed in eliminating the sulphur. I then, for the sake of illustrating the process generally, speak as follows:—

Suppose that four lime purifiers are employed, the gas may [not *must*] be passed through the first two vessels until carbonic acid appears in the gas issuing from No. 2. As soon as this occurs, No. 1 (the contents of which are now carbonated) is recharged with fresh lime, and used in the second place in the series—No. 2 being used as the first of the series. By the time carbonic acid again appears in the gas issuing from the second vessel of the series (which was previously No. 1), the lime in the first vessel (previously No. 2) will be fully carbonated, whereupon it is to be recharged and used as the second vessel of the series; and so on. In this way the carbonic acid is wholly removed from the gas by these two first vessels of the series, while the lime which they contain is converted into carbonate, in which state it can be removed from the purifiers without occasioning much nuisance.

In consequence of this mode of employing the two first purifiers, the lime in the third purifier is converted into sulphide of calcium by means of the sulphuretted hydrogen expelled from Nos. 1 and 2 by the carbonic acid. And as sulphide of calcium absorbs bisulphide of carbon, the gas, in passing through No. 3, will be purified from sulphur in both forms—*i. e.*, both from sulphuretted hydrogen and from bisulphide of carbon. The last vessel of the series, No. 4, will be employed to arrest any sulphur passing forward in the gas from No. 3.

When No. 3 is recharged with fresh lime, it may be used last in the series—No. 4, the lime in which is by this time partially sulphuretted, being placed before it as No. 3. Or, when No. 3 becomes foul, it may be employed either as the first or the second vessel of the series—No. 4 taking its place as No. 3, and No. 1, recharged with fresh lime, taking the last place in the series—*i. e.*, as No. 4. By thus using the sulphide of calcium purifier No. 3, when fouled, as the first or second vessel of the series, its contents will be desulphuretted, so that they can be removed from the purifier in the form of carbonate of lime.

You quote the two first sentences of this description, and then remark: "But surely, when carbonic acid issues from No. 2, it is a sign that the lime therein is also fully carbonated; and since carbonate of lime has not the smallest effect in the purification of gas, what is the use of making No. 2 purifier No. 1?" That carbonate of lime has no effect in the purification of gas is stated over and over again in my pamphlet; and you are mistaken in thinking that "when carbonic acid issues from No. 2, it is a sign that the lime therein is also *fully carbonated.*" The fact is otherwise; and on the following page you will find a good reason given for (not of necessity, but by preference) employing two purifiers instead of one, as decarbonators. I observe, in the notes on my method of working lime purifiers, as follows:—

In determining the number of decarbonating vessels to be employed, the following point must be kept in view:—viz., that the displacement of SH_2 from lime, or the other alkalies afterwards mentioned, depends greatly upon the rapidity with which the gas (containing CO_2) is passed through the sulphuretted alkali. For example, when CO_2 is brought slowly in contact with lime in the form of sulphide of calcium, nearly the whole of the SH_2 will be expelled from the lime in any purifier before CO_2 appears in the issuing gas; whereas, if the CO_2 is brought more rapidly in contact with lime in the

form of sulphide of calcium, a larger portion of the SH_2 will remain unexpelled from the purifier when CO_2 first appears in the gas issuing from the said purifier. Hence, whenever the number of purifiers admits of it, not less than two of those vessels ought to be employed as decarbonators, in order that the lime in the first purifier may be fully carbonated before CO_2 appears in the gas issuing from the last of the decarbonating vessels. If, on the contrary, only one purifier be employed to decarbonate the gas, it will be necessary to change the lime in that vessel *long* before it is fully carbonated.

This, as is manifest, is a subsidiary point in the process, but I determined the action of carbonic acid upon sulphuretted lime carefully, and I am confident, if you will investigate the question for yourself, that you will find that I am right, and that the lime in the No. 2 purifier is *not fully carbonated* at the time when carbonic acid first appears in the gas issuing from it. It still contains a portion of sulphuretted lime, and, as above stated, it is one part of my object so fully to carbonate the lime that it may be removed from the purifiers in a state that will occasion little or no nuisance.

You also remark: "The complete solution of the sulphur question was arrived at when the author made the discovery that carbonic acid will displace sulphuretted hydrogen from the sulphides of the alkalies and alkaline earths, and that the sulphides of calcium and of alkaline metals absorb bisulphide of carbon. But both these facts were well known, and had been applied in gas purification long before metropolitan gas referees were thought of." In this remark you do not refer, either one way or other, to the originality of the processes by which I apply these facts in such manner as to attain "the complete solution of the sulphur question;" but I crave permission to offer a few words on the statement that "these facts were well known, and had been applied in gas purification long before metropolitan gas referees were thought of."

Although I studied chemistry for two years under Dr. Hugo Reid, in Edinburgh, and although you remarked that my specification (entirely prepared by myself) shows "the hand of a skilled chemist," I do not for a moment profess much knowledge of general chemistry or of chemical literature. But I can say this, that during my efforts to solve the sulphur question, which was the critical difficulty which the gas referees were appointed to decide upon, I referred to many books on chemistry, yet could find none in which any mention was made of the superior affinity which CO_2 has for alkaline substances compared with SH_2. Nor could I find any such fact mentioned in any works or papers on gas purification which came under my notice. Of course, I cannot affirm that no such fact was ever published; but, if it was, I doubt not some of your wide circle of readers will point it out.

Secondly, as to the capacity of sulphides of calcium to absorb bisulphide of carbon. At the time when I devised my several processes of gas purification (only one of which relates to the use of sulphide of calcium), I was not aware that Berzelius, in 1848, had found, in his laboratory experiments, that sulphide of calcium could absorb bisulphide of carbon. Nor was I aware (till you mentioned the matter in November, 1872) that Messrs. Wood and Barrett had patented the use in gas purification of soda-waste—a substance of which sulphide of calcium forms part. But I knew that when this substance was practically tried by Mr. Wood along with Mr. Harris, at the Bow Common works, it proved a total failure. In a summary of his various experiments in sulphur purification, extending from October, 1864 down to September, 1869, which Mr. Harris supplied to the gas referees, reference is made to the trial of soda waste as follows:—"October, 1865.—Used soda waste. Not any good." In consequence the patent was not carried beyond a preliminary specification. I also know that on March 8, 1872, when I informed Mr. G. Trewby of my new process of working lime purifiers, whereby pure sulphides of calcium can be produced to any extent and in any number of separate purifiers that may be desired, he replied that sulphide of calcium would not do, and that a friend of his who had tried it had obtained no good results. Moreover, three months after my process had been made public, Mr. Trewby, referring to my process, reported to his directors that he had little faith in sulphide of calcium; also adding that he "had endeavoured, in *laboratory experiments* [no mention of trying it in actual gas-making], to reduce the amount of sulphur" by means of sulphide of calcium, but without satisfactory results.*

But even if there had been a public and general knowledge of the two separate and wholly independent facts—(1) of the superior affinity of CO_2 for alkaline substances compared with SH_2, and the power of the former acid to expel the latter from lime; and (2) the perfect efficiency of sulphide of calcium to adequately purify coal gas from "sulphur"—I need not say that this would not in any way affect the originality of my process, wherein I combine these two separate facts in such manner as to make the purification of gas from carbonic acid a direct means of thereafter producing sulphide of calcium to any extent, and in such separate purifiers as may be desired, whereby the gas is adequately purified from sulphur in all forms, thereby attaining a complete solution of the sulphur question in those works where the lime nuisance is permissible.

That such a process was not previously in use in any gas-works I can show by direct evidence, as regards the only works in connexion with which such an allegation has quite recently been made. Of indirect proofs—if, indeed, they can be called "indirect" in this special case—the number is almost endless. Permit me to specify one or two. In the last week of March, 1872, Mr. Vernon Harcourt, F.R.S., delivered a lecture on "Gas Purification," in Albemarle Street, at which I was present, besides several gentlemen of influential position in the gas world, and also a member of the Board of Trade. In this lecture Mr. Harcourt stated, in the most explicit terms, that there were no means whatever of purifying coal gas from the bisulphide of carbon, except the one particular process to a description of which his lecture was specially devoted—namely, by passing the gas through hot iron pipes in such manner as to transmute the bisulphide of carbon into sulphuretted hydrogen, and thereafter remove the SH_2 by the ordinary processes. This method, as well known to your readers, was recommended long ago by Dr. Bowditch. It is still more effectual when the gas is passed "through the red-hot pipes in conjunction with steam," as recommended by Mr. L. Thompson; but when this process was tried at the Bow Common works in February, March, and April, 1865, Mr. Harris found that, "when in practical operation, the decomposition of the gas occasioned such a deposit of soot in the pipes as to necessitate the abandonment of the process." Mr. Evans, of the Chartered Company, in July, 1871, tried to attain the desired object (that of "dissociation") by means of superheated steam without the use of heated pipes. But the patent which he took out never proceeded beyond the preliminary specification; but I saw the process of using both steam and heated iron pipes at work for several weeks at Horseferry Road in the autumn of 1871—the process being ultimately abandoned. Immediately before the delivery of Mr. Harcourt's lecture the Board of Trade had urgently, nay, imperatively, required of the referees to fix the sulphur maximum; and when the eminent lecturer so emphatically stated his opinion that there were no means of purifying gas from "sulphur" except by the above-mentioned process, which I knew to be practically worthless, I exchanged looks with the member of the Board of Trade, who also appeared alive to the importance of the statement.

Next, take the lecture delivered by the distinguished professor of chemistry at Oxford, before the Gas Managers Association, in May, 1872, in which he described and strongly recommended a process for the solving of the long-existing sulphur difficulty which was substantially identical with mine—my process being at that time either very imperfectly or not at all known to him. Can any one who knows Dr. Odling, either personally, as I have the pleasure to do, or by his world-wide reputation, believe for a moment that he would describe as original a process which was known and (as the allegation now is) practically applied at Beckton? Moreover, by the advice and at the request of the referees, made to the Chartered Company, Dr. Odling and also Dr. Letheby inspected the sulphur purification at Beckton (which was a total failure) in the middle of March; so that if the above-mentioned process, which he subsequently lectured upon as original, had been then employed (or anything like it) at Beckton, unquestionably he would not have concealed the fact before the Gas Managers Association.

Again, so late as the 28th of August, 1872, Mr. Wills, F.C.S., delivered a lecture upon the sulphur question at the Royal Institution, Manchester, reported in your JOURNAL of the 8th of October. He confessed himself unacquainted with any complete solution of the sulphur difficulty, and says: "With regard to the disulphide of carbon, its removal has hitherto baffled all attempts, and, as a consequence, it still appears in the distributed gas. The methods which have been suggested for its removal are either so unsatisfactory as to make their adoption almost useless, or so impracticable as to render their introduction impossible." He subsequently refers to Mr. Harcourt's plan, and then to that recommended at the Gas Managers Association by Dr. Odling. Mr. Wills had never heard of such a process before (mine being still unknown to him), and consequently he speaks of it as, "I believe, first suggested by Dr. Odling." Whereupon, in your "Circular to Gas Companies," you remark that "this is a claim we do not believe Dr. Odling would make for himself."

In fact, as shown in the documents published in your JOURNAL during the summer and autumn of last year, the question at first was not as to the originality of my process of using lime in sulphur purification, but whether or not it was the adoption of such process that produced the remarkable reduction in the amount of sulphur in the Beckton gas, the sulphur suddenly falling from a monthly average of 42 grains, with maxima of from 50 to 55 grains, down to a monthly average of 10 grains, and a maximum of only 12·3 grains. Mr. Trewby's letter of the 25th of June, 1872, is a substantial denial that such process was then in use at Beckton. Indeed, he not only inferentially questions the efficiency of such a process, but expresses grave doubts as to whether sulphide of calcium will extract the "sulphur" from gas at all, adding that when he tried the sulphide in laboratory experiments he had been unable to get satisfactory results.

It will probably surprise most of your readers to hear that it is now alleged that Mr. Trewby had himself invented and practically adopted the said process in the Beckton works in October, 1871, and thereafter. Such an allegation does not require to be commented upon in your JOURNAL, as it is well known that up to the middle of May, 1872, the gas made at Beckton was far fouler with sulphur than that made in any other gas-works in London. But, as a matter of fact, that no such process was so employed in the Beckton works is known to several gentlemen of position in the gas world, as well as to me.

Oct. 1, 1873. R. H. PATTERSON.

* Mr. Trewby's statement to the directors of the Chartered Company, dated June 25, 1872, is as follows:—"It appears to me that it is necessary to determine in what state the sulphur exists in the gas, and how much of it can be extracted by sulphide of calcium. Some of our eminent chemists, who have deeply studied the question, have not been able as yet to come to a conclusion in the matter. I have endeavoured in laboratory experiments to reduce the amount of sulphur by a more extended system of purification by sulphide of calcium, but hitherto without any great results."

Miscellaneous News.

A NEW MODE OF CONDENSING THE LIQUEFIABLE MATTERS HELD IN SUSPENSION IN GASES.

By MM. E. PELOUZE AND P. AUDOUIN.*

It is well known to all gas engineers that gas, as it passes from the retorts, carries along with it a quantity of liquefiable matters (tar and ammoniacal liquor) to the amount in general of 12 per cent. of the weight of the coal distilled. Only 4 or 4½ per cent., however, condenses in the hydraulic main, although the temperature of that part of the apparatus is always below 212° Fahr., while the boiling point of the tar is above 600° Fahr. The reason, no doubt, is that the liquid particles are present in the gas in the vesicular form. The reduced temperature, which it is easy to obtain by the employment of a refrigerating apparatus, is not sufficient to cause the condensation of these particles, and it is only by carrying the gas a long circuit, and using a coke condenser, that they can be so completely removed that the tarry matters may not interfere with the action of the purifying materials. It may be asserted, however, that in a majority of works, and especially at the time of greatest production, the gas is not completely deprived of the matters which ought to be removed before it reaches the purifiers.

The new mode of condensing, invented by the authors, is founded upon the principle that the liquefaction of the globules held in suspension by the gas is brought about either by contact of the particles with solid surfaces, or with each other; the object is to obtain, by the aid of a very simple apparatus, occupying but a small space, the complete condensation of the liquid particles carried along by the gas or vapour.

The action of the apparatus is as follows:—The gas to be purified is made to flow through a series of holes of small diameter, so forming jets, which strike against a surface placed opposite. In the passage of the gas through the holes, the liquid molecules are brought into close contact with each other, and the action is completed by the contact with the solid surface upon which the tarry matter is deposited.

The intimate contact between the liquid globules and the gas which holds them in suspension, obtained by the use of this apparatus, effects the condensation of some matters (ammonia, sulphuretted hydrogen, bisulphide of carbon) which hitherto have only been removed by complicated methods, sometimes injurious to the illuminating power of the gas (washing with liquor, &c., &c.). It must be added that by passing the gas properly cooled through the apparatus, any naphthaline is completely eliminated and retained along with the tarry matters.

A high pressure is not necessary to the use of the apparatus, eight-tenths of an inch of water being sufficient in ordinary cases. It may be placed either before or after the exhauster; if before, a weak vacuum must be maintained.

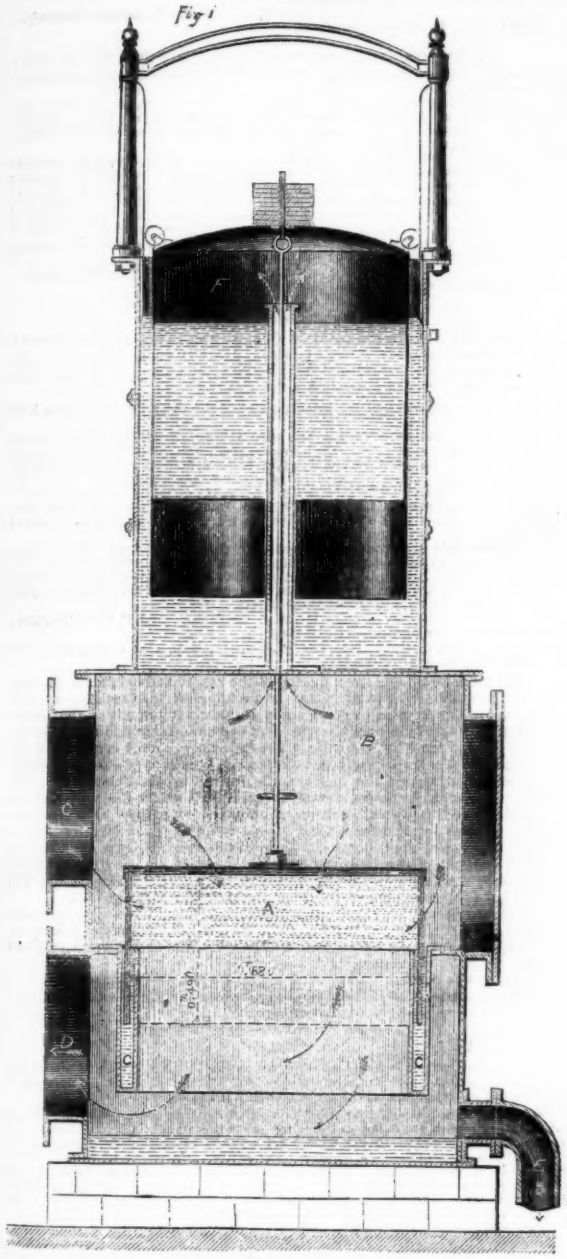
The most striking result of the use of the apparatus is the almost complete removal of sulphuretted hydrogen from the gas, and it follows that a very important economy in purifying materials must be effected wherever it is employed. An apparatus (of which we append a drawing) has been in operation in one of the Paris works, at which the daily make exceeds 350,000 cubic feet, for several months with perfect success; and others are now to be installed in all the works of the Paris Company. The gas after passing through this apparatus, the capacity of which is less than a cubic yard, is found to be completely deprived of tarry matters, while the tar deposited is rich in oils, and the ammoniacal liquor collected is larger in quantity and more than twice the strength of the ordinary condensed liquor.

* Abstract from the "Comptes Rendus" of the Academy of Sciences, Paris, and other papers.

In conclusion, it is said that numerous photometric experiments have proved that the gas loses none of its illuminating power in passing through the apparatus.

General View of the Apparatus for Operating on a Make of 350,000 *Cubic Feet in* 24 *Hours.*

Fig 1



Description.

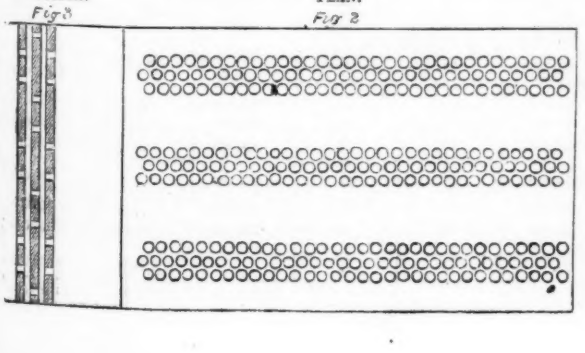
A.—Condensing apparatus, properly so called.
B.—Chamber in which the apparatus moves.
C.—Inlet for gas.
D.—Outlet for gas after passing condensing apparatus.
E.—Outlet-pipe for condensed products terminated by a syphon.
F.—Regulator by means of which the number of perforated plates in use is varied according to the quantity of gas to be purified.
G.—Water space into which the apparatus dips.

Arrangement of the Plates forming the Partitions of the Condensing Apparatus A.

(*The section shows a series of perforated plates or partitions, the holes in one being always opposite a solid surface in the next.*)

SECTION. Fig 3

PLAN. Fig 2



GAS AND WATER WORKS FACILITIES ACT, 1870, AMENDMENT ACT, 1873.

Applications have already been made to the Board of Trade for Provisional Orders under this Act, by the Alliance and Dublin Consumers Gas Company, the Cork Gas Consumers Company, the Paisley Corporation, the Wrexham Gas Company, and the Maryport Town and Harbour Company.

The following is the draft order applied for by the

ALLIANCE AND DUBLIN CONSUMERS GAS COMPANY.

"*Draft Provisional Order by the Board of Trade, under the powers of the Gas and Water Facilities Act,* 1870, *Amendment Act,* 1873, *to amend the Special Act, videlicit, the Dublin Alliance Gas Act,* 1871, *of the Dublin Alliance Consumers Gas Company, in respect of the Illuminating Power and Price prescribed by that Act.*

"The Dublin Alliance Consumers Gas Company, notwithstanding the provisions of their special Acts, may, for a period of two years, from and after the 1st day of October next, reduce the present quality of gas from 20 candles and 16 candles illuminating power, to one uniform quality of 14 candles, and charge for the same 5s. 6d. per 1000 cubic feet.

"That the Alliance and Dublin Gas Acts shall be throughout construed during the said period of two years as if gas of the quality of 14 candles had been the quality prescribed by the said Acts, and the said Acts to that extent be held to have been amended and varied during the said period.

"Provided, that during the supply of such lower quality of gas, the company shall not divide more than at the rate of £5 per cent. per annum on the ordinary share capital."

In answer to this application the Board of Trade have sent the following reply refusing their consent to the order:—

"*Board of Trade, London, S.W., Sept.* 22.

"Sir,—With reference to the application of the Alliance and Dublin Consumers Gas Company for Provisional Order under the Gas and Water Works Facilities Act, 1873, I am directed by the Board of Trade to inform you that, having considered the application and the objections thereto which have been lodged with them, they are of opinion that they ought not to entertain an application made by directors who are stated to have resigned their offices in consequence of charges of mismanagement, pending a general meeting at which their resignation may be accepted and other directors may be appointed by the shareholders. Under these circumstances, the Board of Trade, as at present advised, have determined that they cannot allow the application to be proceeded with—at any rate, for the present.

"I am, sir, your obedient servant, "THOMAS GRAY.

"R. M. Muggeridge, Esq."

CORK GAS CONSUMERS COMPANY.

The draft order is as follows:—

"*Order for Increasing the Maximum Prices of Gas prescribed by the Cork Gas Act,* 1868.

"1. This order may be cited as the Cork Gas Order, 1873.

"2. The Cork Gas Act, 1868, and this order shall be construed together, except so far as such construction would be inconsistent with or repugnant to the provisions of this order.

"3. The Cork Gas Consumers Company shall be the undertakers for the purposes of this order, and are in this order referred to as the undertakers.

"4. The price of gas to be charged by the undertakers during the continuance of this order shall be as follows:—

As regards the district comprised in any lighting contract with the corporation, not exceeding the rate of 5s. 6d. per 1000 cubic feet; and

As regards the limits outside such district, not exceeding the rate of 6s. per 1000 cubic feet.

And section 58 of the Cork Gas Act, 1868 (herein called 'the special Act') shall be read and construed as if such prices respectively were named therein: Provided always, that the undertakers shall not divide more than at the rate of £5 per centum per annum on their ordinary capital for any half year in which they shall have charged under the powers conferred upon them by this order more than the maximum price prescribed by the special Act.

"5. Notwithstanding anything to the contrary in the 52nd section of the special Act, but subject nevertheless to the conditions specified in the said section, the undertakers may charge the corporation a sum not exceeding £4 15s. sterling per annum for each public lamp, in lieu of the sum of £4 sterling which they are by the said section authorized to charge.

"6. This order shall come into operation on the 15th day of December, 1873, and shall continue for the term of three years.

"7. The costs, charges, and expenses of, and incident to, the applying for preparing, obtaining, and confirming this order, and otherwise in relation thereto, shall be paid by the undertakers."

No decision has yet been given on this application.

PAISLEY CORPORATION.

"*Order for Making an Amendment of the Paisley Corporation Gas Act,* 1870, *in relation to the Maximum Price of the Gas to be supplied*

"1. In this order the expression 'the corporation' means the magistrates and Town Council of the burgh of Paisley.

"2. This order shall take effect on and after the 15th day of October, 1873, hereinafter referred to as the 'commencement of this order.'

"3. The operation of this order is limited to the period of two years from and after the commencement of this order.

"4. Notwithstanding anything contained in the Paisley Corporation Gas Act, 1870, the corporation may, from and after the commencement of this order, and so long as the same continues in operation, charge for gas supplied by the corporation and consumed by meter, any price not exceeding the rate of 6s. per 1000 cubic feet."

This order has been granted.

WREXHAM GAS COMPANY.

"*Provisional Order for the Amendment of the Wrexham Gas Act,* 1870, *in relation to the Maximum Price of the Gas to be supplied.*

The draft order, after reciting the provisions as to price in the Wrexham Gas Act, 1870, and the increase in the cost of the production of gas since the passing of that Act, declares that—

"1. On and after the 29th of September, 1873, the Wrexham Gaslight Company (incorporated by the Wrexham Gas Act, 1870), in lieu of the maximum prices which they are, under the 65th clause of the said Act, entitled to charge for gas supplied by them to persons who shall burn the same by meter, shall be, and are hereby empowered to charge per 1000 cubic feet any price not exceeding the several rates following—that is to say, 5s. for gas supplied within a radius of one mile from the centre of the doorstep of the north porch of the church of St. Giles or parish church of Wrexham, 5s. 6d. for gas supplied within a radius of two miles from the same point, and 6s. for gas supplied beyond the said radius of two miles; and the said 65th section of the said Act shall be amended accordingly, the said Act in all other respects remaining in full force and validity.

"2. This order shall remain in force from the 29th of September, 1873, up to and including the 28th of September, 1875, and its operation is limited to that period.

"3. The powers given by this order shall cease if the company shall for any half year during which they shall have charged more than the maximum price, as prescribed by the said 65th section of the said Act, pay a dividend on their ordinary capital exceeding the rate of £4 12s. 6d. in the £100 by the year, being the average amount of the dividend they have paid during the two years next preceding the application for this order.

"4. All the costs, charges, and expenses of and incidental to the obtaining of this order, and otherwise incurred in relation thereto, shall be paid by the company.

"5. This order may be cited as the Wrexham Gas Order, 1873."

In this case the Corporation of Wrexham have memorialized the Board of Trade against the order, and an inquiry is to be held on the 15th inst., before G. Vernon Harcourt, Esq., at the Town-Hall, Wrexham.

MARYPORT TOWN AND HARBOUR COMPANY.

"*Order to Amend the Maryport Town and Harbour Gas Act, 1869, with respect to the Price of Gas, and for other purposes.*

"1. This order may be cited as the Maryport Town and Harbour Gas Order, 1874.

"2. This order and the Maryport Town and Harbour Gas Act, 1869, shall be read as one, except where the provisions of that Act are varied by this order.

"3. In this order the several words and expressions to which, by the Gas and Water Works Facilities Act, 1870, Amendment Act, 1873, meanings are assigned, have the same respective meanings as in the said Act mentioned.

"*Undertakers.*

"4. The Maryport Town and Harbour Gas Company shall be the undertakers for the purposes of this order, and are in this order referred to as 'the undertakers.'

"5. The limits within which the undertakers are by this order authorized to supply gas are the same as those authorized by their special Act.

"*Price of Gas.*

"6. The 50th section of the special Act is hereby repealed, and from and after the 1st of January, 1874, and thenceforth until the 1st of January, 1876, the price to be charged by the undertakers for gas supplied by them shall not exceed 5s. 6d. per 1000 cubic feet within the township of Netherhall, in the county of Cumberland, and 6s. 6d. for gas supplied elsewhere within the gas limits of the undertakers. Provided always, that the undertakers shall not divide more than at the rate of 5 per cent. per annum on their ordinary capital for any half year in which they shall have charged more than the maximum price prescribed by the special Act.

"7. Nothing in this order contained shall alter, vary, or affect any contract or agreement duly made or any liability incurred before the passing of the Act confirming this order with respect to the supply of gas by the undertakers.

"8. All the costs, charges, and expenses of and incidental to the applying for, preparing, obtaining, and confirming this order, and otherwise in relation thereto, shall be paid by the undertakers."

No decision has yet been given on this application.

BRIGHTON GAS SUPPLY.

In reference to the proceedings in the Brighton Town Council, reported in the last JOURNAL (p. 847), we understand that the Corporation Gas Committee, having put themselves in communication with the two gas companies, have received the following replies to their requisitions:—

Brighton and Hove General Gas Company, Office, 29, St. Swithin's Lane, London, E.C., Sept. 12, 1873.

Sir,—Referring to my letter to you of the 5th instant, I now beg to inform you that your letter to me of the 4th inst. has this day been laid before my directors, and that the necessary instructions have been given to supply new 4-feet per hour burners to all public lamps in the borough of Brighton, now supplied by this company, and to light and extinguish such lamps in accordance with the schedule of hours supplied by you.

I am also directed to state that the new burners were ordered immediately on the receipt of your letter; but, as they have to be specially manufactured, some delay must in consequence take place.

The directors think it their duty to express their opinion that the reduced rate of consumption per hour decided upon by the committee, will be unsatisfactory to the committee and to the public. For the future the actual amount of light per hour will be little more than two-thirds of the amount given under the contract. Any desired reduction in the annual quantity of gas consumed would be better obtained by a judicious reduction in the number of lighting hours per annum. If the committee themselves would undertake the lighting and extinguishing and unconditional control of the public lamps, the costly obligations of the contract would be avoided, and 15,000 feet per lamp per annum would be found sufficient, without any reduction in the quantity of light during the hours when such light is necessary.

(Signed) D. SANDEMAN, Secretary.

David Black, Esq., Town-Clerk, Brighton.

The Brighton Gaslight and Coke Company, Black Rock, Sept, 19, 1873.

Dear Sir,—Your letter of the 10th inst., and the copies of the reports of the Gas Committee, have been under the consideration of the directors of this company.

I am instructed to inform you of the willingness of the directors, in compliance with the request of the Town Council, to cause the required alterations to be made in the rate of consumption per hour, and in the times of lighting and putting out the public lamps, according to the terms and conditions specified.

The directors respectfully decline to charge a less price than four shillings and sixpence (4s. 6d.) per 1000 cubic feet for gas that may be required to be supplied to public lamps on the Preston Road—northwards of the railway viaduct, and in the village of Preston, as that would be a violation of the principle recognized in the existing contract.

The directors have requested me to mention that, as the reduction of the quantity of gas in each lamp by one-fifth of the former rate of consumption, and the fewer hours of burning, may cause dissatisfaction on the part of the public, they trust the company will be exonerated from blame.

(Signed) J. O. N. RUTTER, General Superintendent.

To F. J. Tillstone, Esq., Chief Clerk, Town-Hall, Brighton.

GAS-METER COMPANY.

The Annual General Meeting of this Company was held at the Offices, 10 Coleman Street, on Thursday, the 2nd inst.—A. ANGUS CROLL, Esq., in the chair.

The SECRETARY (Mr. Cogar) read the directors report and a full statement of the accounts constituting the balance-sheet:—

The directors herewith present the balance-sheet of the company, duly audited, for the year ending June 30 last.

The result of the year's operations is that, after writing off £2000 from the amount paid for the redemption of the goodwill of Messrs. Croll, Rait, and Co., as well as £500 for the goodwill at Oldham, and after adding £500 to the depreciation-fund—in all £3000—there is left a balance of undivided profit amounting to £6589 12s. 3d. Out of this there has been paid, for an interim dividend of 3 per cent., £1834 6s. 7d.; and it is proposed now to pay 7 per cent. dividend—£4056 7s. 9d.—making 10 per cent. for the year, after which there will remain a balance to be carried to the next year's account of £698 17s. 11d.

In consequence of his numerous engagements, Mr. Guyatt has been obliged to resign the office of secretary to this company, and it has been with great reluctance that the directors have accepted Mr. Guyatt's resignation. They have appointed as his successor Mr. W. A. Cogar, who has been seven years in the employment of the company as chief accountant, and has the full confidence of the board.

The directors who retire by rotation are A. A. Croll, Esq., and C. Nicholson, Esq., who, being eligible, offer themselves for re-election.

The auditors, W. H. Bennett, Esq., and W. Nottage, Esq., also retire, and, being eligible, offer themselves for re-election.

The CHAIRMAN, in moving the adoption of the report and balance-sheet, said he believed the statement was so clear, and he hoped also so satisfactory, that it was not necessary for him to go into any elaborate statement of the details. He had only to congratulate the shareholders upon the profitable results of the working of the company for the year. The purchase by the company of the goodwill rights of Messrs. Croll, Rait, and Co., has been carried out successfully. He could say this because the merit of the operation was due chiefly to Mr. Nicholson. As far as he himself was concerned he was a loser by it to the extent in degree of the benefit conferred upon the company. One other circumstance he had to mention—namely, the resignation of Mr. Guyatt, as secretary. Mr. Guyatt had devoted a large share of his energy, amid various duties, to the service of this company, and the directors, knowing the quality of these services, suggested to the shareholders that they should present Mr. Guyatt with a bonus of £200, to which he was certainly well entitled.

Mr. NICHOLSON seconded the adoption of the report, and in doing so explained the financial results of the redemption of the goodwill of Messrs. Croll, Rait, and Co., and explained also the saving that will be effected in the current year and succeeding years by the cancelling of that obligation.

A resolution was carried, voting £200 to Mr. Guyatt as an honorarium.

The retiring directors and auditors were all unanimously re-elected, and the meeting broke up with an expression of general satisfaction.

THE GASLIGHT AND COKE COMPANY.

The Half-Yearly Ordinary General Meeting of Shareholders was held at the Offices, Horseferry Road, Westminster, on Friday, Oct. 3—the Hon. RICHARD HOWE-BROWNE, deputy-governor, presiding.

The SECRETARY (Mr. J. O. Phillips) read the advertisement convening the meeting, the corporate seal was affixed to the register of shareholders, and the minutes of the last meeting were read and approved.

The following report and statements of accounts were presented:—

The directors have the honour to report that the commissioners appointed by the Board of Trade to revise, for the present year, the price of gas supplied by the company, after a most searching and patient investigation, concluded their labours by certifying for an advance of 7d. per 1000 cubic feet of common gas of 16 candles illuminating power, and of 10d. per 1000 cubic feet of cannel gas of an illuminating power equal to 23 candles. The increase in price so awarded, although insufficient to enable the directors to make up to the prescribed amount the insurance-fund recognized by the City of London Gas Act, 1868, has served, with the constant exercise of the most rigid economy, to produce such a profit as will enable them to pay, for the half year to the 30th of June last, the dividend to which Parliament has, by the same Act, declared the proprietors to be entitled. Unless special application be again made to the Board of Trade, the price of gas, after the close of the year, must, under the provisions of the general Act, revert to the very low maximum thereby fixed. The directors, therefore, having regard to the further advance in the price of coal made in last spring, and since maintained, will feel it their duty to make a renewed application to the Board of Trade, at the proper time, to provide against a deficit of authorized profits, which even the large improvement in the value of residual products will unquestionably fail to secure.

The continued high price of iron has again precluded any great progress with new work; but the directors are happy to announce the completion of the examination and re-arrangement of the whole of the mains and services in their eastern district, the result of which has been to reduce, by upwards of 80 miles, the length of mains in action within the City of London alone. This work, which has already occupied two years, is now being proceeded with in the company's western districts, and will, without doubt, exercise a very large influence on the important item of leakage, or unaccounted-for gas, in which the directors anticipate a material reduction.

With a view to effect further economy by every possible means, the directors introduced a bill into Parliament, in the last session, to authorize the company, *inter alia*, to purchase and use steam colliers for the conveyance of the large quantity of coal required in its manufacture; and the Royal Assent has been given to this measure. The present condition of the iron market is, however, unpropitious for the commencement of the formation of a fleet.

Beyond stating the fact that the business of the company is proceeding satisfactorily, the directors have only to add that the warrants for the half year's dividend on the ordinary shares, at the rate of 10 per cent. per annum, as well as for the dividends on the several classes of preference shares, will, as usual, be transmitted to the proprietors, by post, 14 days after the day of the meeting.

No. 1.—STATEMENT OF SHARE CAPITAL, *on June* 30, 1873.

Acts of Parliament regulating the Capital of the Company.	Description of Capital.	Maximum Dividend authorized.	Number of Shares issued.	Nominal Amount of Shares.	Called up per Share.	Total paid up.	Amount not paid up or unissued.	Total Amount authorized.
The Gaslight and Coke Company's Act, 1868	Share A Ordinary stck.	10 per cent. per annum.	90,000	£10	£10	£900,000	..	£900,000
	Share A Preferencestock.	5 per cent. ,, with option of conversion.	25,000	10	10	250,000	..	250,000
	Ditto.	Ditto.	20,000	10	10	200,000	..	200,000
The Victoria Docks Gas Act, 1857	Ditto.	Ditto.	20,000	10	6	179,951	£40,268	200,000
	Ditto.	Ditto.	10,000	10	6	79,778		100,000
			Amount received in anticipation of calls					
The City of London Gas Company's Act, 1859	Share A Ordinary stck.	10 per cent. per annum.	30,000	10	10	300,000	..	300,000
	Share B ditto.	4 per cent. ,,	10,000	10	10	100,000	..	100,000
The Great Central Gas Consumers Act, 1851	Share C Preferencestk.	10 per cent. ,,	20,000	10	10	200,000	..	200,000
The Equitable Gaslight Company's Act, 1842	Share D ditto.	10 per cent. ,,	12,000	25	25	300,000	..	300,000
The Companies Act, 1862 (25 & 26 Vic., cap. 89), as applied to the Western Gaslight Company, Limited	Share A Ordinary stck.	10 per cent. ,,	40,000	10	10	400,000	..	400,000
	Ditto.	10 per cent. ,,	20,000	10	6	120,000	80,000	200,000
The Gaslight and Coke Company's Act, 1872	Share A.	10 per cent. ,,	..	..	..	..	1,000,000	1,000,000
						£3,029,732	£1,120,268	£4,150,000

No. 2.—STATEMENT OF LOAN CAPITAL, *on June 30, 1873.*

Acts of Parliament regulating the Capital of the Company.	Description of Loan.	Rate of Interest.	Total Amount borrowed.	Remaining to be borrowed.	Total Amount authorized.
The Gaslight and Coke Company's Act, 1868	Debentures.	4½ per cent. per annum.	£300,000	..	£300,000
	Ditto.	4½ per cent. ,,	62,500	..	62,500
	Ditto.	4½ per cent. ,,	50,000	..	50,000
	Ditto.	4½ per cent. ,,	50,000	..	50,000
The City of London Gas Company's Act, 1859	Ditto.	4 per cent. ,,	1,500	..	60,000
	Ditto.	4½ per cent. ,,	4,460		
	Ditto.	4½ per cent. ,,	39,245		
	Ditto.	5 per cent. ,,	14,855		
The Great Central Gas Consumers Act, 1851	Ditto.	4 per cent. ,,	2,000	..	66,000
	Ditto.	4½ per cent. ,,	10,050		
	Ditto.	4½ per cent. ,,	41,050		
	Ditto.	5 per cent. ,,	12,900		
The Victoria Docks Gas Act, 1857	Ditto.	4½ per cent. ,,	25,060		25,000
The Companies Act, 1862 (25 & 26 Vic., cap. 89), as applied to the Western Gaslight Company, Limited	..	..	..	200,000	200,000
The Gaslight and Coke Company's Act, 1872	..	..	..	250,000	250,000
			£613,500	£450,000	£1,063,500

No. 3.—CAPITAL ACCOUNT, *for the Half Year ending June 30, 1873.*

Dr. *Cr.*

	Expenditure from June 24, 1868, to Dec. 31, 1872.	Expended this Half Year.	Total Expenditure to June 30, 1873.		Certified Receipts to Dec. 31, 1872.	Received during Half Year.	Total Receipts to June 30, 1873.
	£ s. d.	£ s. d.	£ s. d.		£ s. d.	£ s. d.	£ s. d.
To Expenditure to June 24, 1868, including expenditure of Equitable Gas Company to June 30, 1871, and Western Gaslight Company to June 30, 1872	..	..	2,150,569 13 2	By Ordinary shares, of £10 each	1,640,000 0 0	80,000 0 0	1,720,000 0 0
Since June 24, 1868—				B shares, of £10 each	100,000 0 0	..	100,000 0 0
Lands acquired, inc. law charges	190,845 4 6	1,768 0 10	192,613 5 4	C ditto, ditto	200,000 0 0	..	200,000 0 0
Buildings, manufacturing plant, storeage, and other structures connected with manufacture	745,877 0 3	62,867 3 3	808,744 3 6	5 per ct. pref. shares, of £10 each	250,000 0 0	..	250,000 0 0
New mains and service-pipes, inc. laying, paving, and other works connected with distribution	183,348 0 0	19,304 11 8	202,652 11 8	Ditto ditto, second issue	200,000 0 0	..	200,000 0 0
Meters (additional), inc. fixing	35,861 1 1	678 3 1	36,539 4 2	Ditto ditto, third ditto	60,000 0 0	47,261 0 0	179,954 0 0
Parliamentary costs	8,217 17 0	1,641 10 6	9,859 7 6	Amount in advance of calls	152,471 0 0		79,778 0 0
Interest on capital raised for works at Beckton	41,117 5 1	..	41,117 5 1	D shares, of £25 each	300,000 0 0	..	300,000 0 0
				Debentures	611,800 0 0	1,700 0 0	613,500 0 0
	1,205,266 7 11	86,259 9 4	3,442,095 10 5		3,514,271 0 0	128,961 0 0	
Cr.							
By Amount realized on sale of surplus lands		24,655 5 5					
Ditto ditto of disused plant		1,832 7 0					
			26,487 12 5				
			3,415,607 18 0				
Balance of capital account			227,624 2 0				
			3,643,232 0 0	Total			3,643,232 0 0

No. 4.—REVENUE ACCOUNT, *for the Half Year ending June 30, 1873.*

Dr. *Cr.*

	£ s. d.	£ s. d.		£ s. d.	£ s. d.
To Manufacture of gas—			By Sale of gas—		
Coals, including carriage, trimming, and dues, &c. (*see* Account No. 9)	293,151 17 8		Common gas (1,374,514,000 cubic feet), at 4s.4d. per 1000	297,811 10 8	
Purifying materials, water, &c.	6,317 15 9		Cannel gas (446,352,000 cubic feet), at 6s. 3d. per 1000	139,485 0 2	
Salaries of superintendents and officers at works	3,673 7 6		Cannel gas (in bulk to the London Gaslight Co.) —(18,324,000 cubic feet), at 3s. 9d.	3,435 13 4	
Wages at works (manufacture)	43,350 18 10		11,689,000 cubic feet, at 4s. 7d. per 1000	2,678 17 5	
Repair and maintenance of works and plant, including renewal of retorts, machines, apparatus, materials, and labour; less old materials sold, £3698 18s. 2d.	30,574 7 11		Public lighting and under contracts	31,913 4 3	
Stokers strike	3,895 17 6				475,324 5 10
		382,964 5 2	Rental of meters	..	5,025 0 0
Distribution of gas—			Residual products—		
Repair, maintenance, and renewal of mains and service-pipes, including materials, laying and paving, and labour	9,224 4 7		Coke (Account No. 10)	93,602 9 0	
Salaries of inspectors, assistant inspectors, and clerks in Light Office	3,976 3 1		Breeze	1,550 0 1	
Meters—repairing, renewing, and refixing	7,436 3 5		Tar	19,905 16 9	
		20,636 11 1	Ammoniacal liquor	18,798 7 4	
Public lamps—					133,856 13 2
Lighting and repairing	..	6,501 18 2	Rents receivable	..	2,040 1 6
Rents, rates, and taxes—			Transfer fees	..	88 12 0
Rents payable	5,420 16 0		Canteen account	..	620 0 10
Rates and taxes	14,370 1 6				
		19,790 17 6			
Management—					
Directors allowance	2,500 0 0				
Company's auditors	250 0 0				
Salaries of secretary and office clerks	2,693 6 8				
Collectors commission	7,612 6 9				
Stationery and printing	1,633 9 0				
General charges	925 17 4				
		15,614 19 9			
Public officers—					
Company's proportion	693 3 0				
Public testing stations	528 19 6				
		1,222 2 6			
General law charges	1,594 0 2				
Ditto ditto *re* stokers strike	1,129 0 5				
Parliamentary charges	318 15 3				
Cost of revision commission	4,040 7 10				
		7,082 3 8			
Depreciation-fund for works on leasehold lands	..	372 10 0			
Superannuation allowances under amalgamation schemes, and annuities	..	6,549 6 0			
Bad debts		1,905 5 11			
		462,639 19 9			
Balance carried to net revenue account		154,314 13 7			
		£616,954 13 4			£616,954 13 4

No. 5.—NET REVENUE ACCOUNT, *for the Half Year ending June 30, 1873.*

Dr. *Cr.*

	£ s. d.	£ s. d.		£ s. d.	£ s. d.
To Interest on debentures accrued to June 30		14,217 17 2	By Balance of net revenue Dec. 31, 1872	74,438 12 8	
Dividend on B shares, at 4 per cent.	£2,000 0 0		Less dividend declared for the half year ending that day	73,275 2 3	
Ditto on C ditto, at 10 ditto	10,000 0 0				1,163 10 5
Ditto on D ditto, at 10 ditto	15,000 0 0		Interest on moneys invested		990 9 10
Ditto on preference shares, at 5 per cent.	14,499 12 4		Revenue account		154,314 13 7
		41,499 12 4			
Interest on payments in anticipation of calls		2,753 7 0			
Defalcation account (Great Central Gas Consumers Company)		2,500 0 0			
Interest on temporary loans		1,350 10 1			
Balance of net revenue applicable to dividend on total of £1,720,000 ordinary stock		94,167 7 3			
		156,468 13 10			156,468 13 10

Dr. No. 6.—INSURANCE-FUND ACCOUNT, *for the Half Year ending June* 30, 1873. *Cr.*

	£ s. d.		£ s. d.
To Balance on June 30, 1873	30,818 7 3	By Balance on Dec. 31, 1872	30,388 2 1
		Interest on amount invested	430 5 2
	30,818 7 3		30,818 7 3

Dr. No. 7.—DEPRECIATION-FUND ACCOUNT (for Works on Leasehold Lands), *for the Half Year ending June* 30, 1873. *Cr.*

	£ s. d.		£ s. d.
To Balance on June 30, 1873	3,929 14 1	By Balance on Dec. 31, 1872	3,486 5 5
		Amount brought from revenue account	372 10 0
		Interest on amount invested	70 18 8
	3,929 14 1		3,929 14 1

Dr. No. 8.—DEFALCATION ACCOUNT (Great Central Gas Consumers Company), *June* 30, 1873. *Cr.*

	£ s. d.		£ s. d.
To Balance on Dec. 31, 1872	14,858 7 5	By Amount brought from net revenue account, for the half year to June 30, 1873	2,500 0 0
		Balance	12,358 7 5
	14,858 7 5		14,858 7 5

No. 9.—STATEMENT OF COALS USED, &c., *during the Half Year ending June* 30, 1873.

Description of Coal.	In Store, Dec. 31, 1872.	Received during Half Year.	Used during Half Year.	In Store, June 30, 1873.
	Tons. cwt.	Tons. cwt.	Tons. cwt.	Tons. cwt.
Common	39,862 0	216,444 0	195,178 0	61,128 0
Cannel	14,796 0	67,809 0	54,719 0	27,886 0

No. 10.—STATEMENT OF RESIDUAL PRODUCTS *made and disposed of during the Half Year ending June* 30, 1873.

	In Store, Dec. 31, 1872.	Made during Half Year.	Used in Manufacture during Half Year.	Sold during Half Year.	In Store, June 30, 1873.
Coke—					
Common—chaldrons	3,402	226,303	77,995	149,516	2,194
Cannel—ditto					
Breeze—ditto	2,100	22,367	107	19,620	4,740
Tar—gallons	303,765	2,435,451	3,376	2,522,564	213,276
Ammoniacal liquor—ditto	719,491	6,499,103	..	6,629,583	589,011

Dr. GENERAL BALANCE-SHEET *on June* 30, 1873. *Cr.*

	£ s. d.		£ s. d.	£ s. d.
To Capital account—		By Cash at bankers	..	53,100 17 1
Balance at credit thereof (Account No. 3)	227,624 2 0	Ditto invested at interest	..	43,728 11 3
Net revenue account—				
Balance at credit thereof (Account No. 5)	94,167 7 3	Stores on hand, viz.:—		
Insurance-fund account—		Coals	..	111,355 1 7
Balance at credit thereof (Account No. 6)	30,818 7 3	Coke and breeze	7,539 6 10	
Depreciation-fund (for works on leasehold lands)—		Tar and other products	6,022 9 3	
Balance at credit thereof (Account No. 7)	3,929 14 1			13,561 16 1
Unpaid dividends	6,605 15 9	Sundry stores	..	23,412 4 3
Preference dividends for amount due to June 30, 1873	41,499 12 4			
Debenture interest for amount due to June 30, 1873	11,514 0 11	Outstanding accounts due to the company, viz.:—		
Interests on payments in anticipation of calls	2,733 7 0	Light account—		
Amount due for coals and to sundry tradesmen and others	65,666 14 10	Arrears uncollected	26,089 12 9	
Benevolent-fund	1,370 1 6	Quarter ending June 30 to be collected	171,496 15 6	
				197,586 8 3
		Coke and other products	18,691 0 10	
		Sundry accounts	1,572 8 2	
				20,263 9 0
		Retiring allowances	..	9,846 0 0
		Ship *Dispatch*	..	716 8 0
		Defalcation account (Great Central Gas Consumers Company)—		
		Balance at debit thereof (Account No. 8)	..	12,358 7 5
	485,929 2 11			485,929 2 11

Examined and found correct. (Signed) S. Adams Beck, Governo
(Signed) J. Sale Barker, H. W. Chisholm, John Thos. Hadland, T. J. Briggs, Thos. Ford, } Audito

I certify that the above accounts are correct, and that the balance of net revenue, for the half year ending June 30, 1873, is £94,167 7s. 3d., and that such amount, subject to deduction for income-tax, is applicable to payment of dividend on £1,720,000 ordinary stock.

Sept. 15, 1873. (Signed) Chas. H. Parkes, Official Auditor.

The Chairman: Gentlemen, I shall not trespass long upon your time with any remarks on the present occasion, because the report has gone so minutely into most of the affairs of the company, that I have but little to say in moving its adoption. I will commence these remarks by stating that during my experience in connexion with this company, extending, as it does, close upon 20 years, both as a director and as the deputy-governor, I have had ample opportunity of judging, from one period to another, as to its condition and circumstances; and I can safely say that, under the management of the court of directors, the company has never been in a more substantial state of prosperity than it stands in at the present moment, considering the peculiar circumstances under which all gas companies are now labouring. I think it will be satisfactory to the proprietors to know that, in the opinion of the whole of the board, such is absolutely the case. I need hardly allude to the difficulties with which we have had to contend in the manufacture of gas so as to come up to the requirements of the Board of Trade, of Parliament, and of the public. You are all aware of the enormous rise in the price of every kind of material required in connexion with gas manufacture. You are aware that the staple commodity with which we have to deal—coal—has risen to an enormous, almost a fabulous price. I need only tell you that, upon the price of coal in the half year preceding the last, we had to contend with an advance of from 7s. to 8s. per ton. That, however, is not all, but from 20s. a ton, which was our contract price last year, we have now to pay a very considerable increase. Our coals during the next year will cost us 7s. per ton, upon the average, more than they have done in the past year, thus making the cost to us, with the exception of one or two fortunate contracts, amount to 28s. or 29s. per ton, or an average of 26s. 6d. per ton, as against 20s. last year. Now, no man of business can be unaware that this state of things must of itself necessitate a very great rise in the price of gas, if the shareholders in the company are to receive the dividend to which they are lawfully and justly entitled. I make these remarks because, as you know, and as it is stated in the report, we have been appealing to a commission under the provisions of the Act of 1868, which gave power to the Board of Trade to institute an inquiry should such a state of things arise as has arisen—viz., an enormous increase in the cost of the materials required for gas-making purposes. I am happy to say that we found that commission acted in a most honourable and upright manner. They entered into all the details put before them by the learned gentleman who addressed them on our behalf, and though from a gas proprietor's point of view they did not give us quite so much as we might consider ourselves entitled to, still they gave us such an advance in the price of gas as enables us to recommend to you the payment to-day of the 10 per cent. dividend which is our maximum rate, and to carry over a small balance. I may state that the addition to the price of gas which the commission sanctioned, was not quite sufficient to enable us to carry out all the provisions of the Act of 1868. There would have been a deficiency of upwards of £5000 if we had this half year placed the full amount to the insurance-fund which we are entitled to accumulate. However, this would not have been the time to make an addition to the nucleus of an insurance-fund which we already have. Perhaps next year we may do so, though, looking at the advancing price of coal, I can hardly venture to speak of it with any degree of certainty. Now we come to the price of iron. Look what we have been paying for iron. It is a well-known fact, from what cause soever it may have arisen, that the price of iron in this country has advanced to a tremendous figure. At the time we laid down our large 4-feet main, 11 miles in length, from Beckton into the City of London, our contract price for iron was £4 10s. per ton. It is the wish of the directors, and their

intention, to duplicate that main, but we are precluded from doing so at the present time on account of the enormous price asked for iron by those from whom we have invited tenders. The price now asked is £9 10s. a ton—more than double the price we formerly paid. You may conceive what a serious matter this is in a work of such magnitude as ours, and you will, I am sure, see that in the face of such an excessive expenditure the directors have acted wisely in deferring the contemplated extension of their mains until the iron question settles itself a little. And with regard to the wrought iron, which we require in large quantities for roofs and various works at Beckton, that has risen, even taking the lowest tenders which we have received, upwards of 12½ per cent. We are not going to stay our hands there, but shall go on with the works, hoping to get them roofed in before the bad weather comes on. But we have been crippled at all our stations by the excessive price of iron. I may also add that the cost of labour has enormously increased. We employ several thousands of hands at our works—skilled workmen and skilled artizans, as well as stokers and common labourers—and in the case of all there has been a considerable increase in the wages paid. And all these additional payments have had to be made out of the profits of the company, so that if it had not been that we obtained a revision of the price of gas, the original proprietors in the company would not have received any dividend on this occasion. We should have had profit sufficient to pay our preference shareholders and our guaranteed dividends, but amongst our old proprietors there would have been a very small balance only to divide. And this reminds me of the very favourable position in which this company is placed by their Act, in comparison with almost every other, in having the power to go before a most impartial tribunal, from time to time, to determine the price which we may charge for gas, so as to enable us to make up our statutory dividend of 10 per cent. The Imperial and the South Metropolitan Companies subsequently acquired this privilege, but these are the only cases in which it exists. I think, under all the circumstances, therefore, you will agree with the board in thinking that the position of our company is a very favourable one. I assure you I only echo the opinion of my brother directors in expressing my great satisfaction with the present state of things. At the same time, as I need hardly state, we have been obliged to practise the most stringent economy and supervision in every department of our operations. We are so closely watched—and properly so, too—by gentlemen appointed under Government, as to the quality and illuminating power of the gas supplied by us, that we are obliged to use every precaution and the most constant attention to keep up to their requirements. There has been some little agitation in one of our districts—the western—as to the alteration in the quality and price of gas supplied by us to them. It is a very large district, and was formerly supplied by the Western Company. Since we amalgamated with that company there have been, of course, considerable alterations effected in it, and these alterations have given offence to some of the consumers. Now, I will say at once that it has always been the wish of this board to consult the convenience of the consumers as far as they possibly could, taking into consideration the interests of the proprietors; and we have met this question in that way. Some parties have objected to the high illuminating power of the gas we supply; some object to the price we charge; some say they burn too much gas; others that they have too little. We have appealed to the vestries of Kensington and other parishes to elicit from their constituents the species of gas they wish to have in the district—whether they will have 20-candle gas at a certain price, or 16-candle gas at a certain other price. A special vestry meeting has, I believe, been summoned at Kensington for next Wednesday, to consider the question, and we shall then know what kind of gas the majority of the consumers require. The wish of this board is to reduce the illuminating power of all the gas in that district to the same standard which is maintained in the City of London and other districts. We shall be guided, without much difficulty, by the decision of the vestry; but I have no doubt that one and all will wish to have the lower illuminating power of the gas at a correspondingly lower price to that charged at present. We have taken the whole subject into our serious consideration, and the decision we have come to is that it would pay the company quite as well to produce and sell the lower quality as the higher. You will observe it is stated in the report that we have been doing a very large work in the City of London, in taking up useless and dead mains, hoping thereby to prevent the leakage or unaccounted-for gas which was made so much of against us before the commission which sat to revise our price this year. It was said that our unaccounted-for gas was much in excess, and that if we had taken pains to reduce it we should have been in a much better position. Now, with a view to carry out that object, we have been, during the last two years, hard at work in the eastern district, in taking up useless mains and services. In the City alone we have taken up 80 miles of main, which were either unprofitable or not actually required. I hope that by this process we shall greatly diminish our leakage, so that when we go before the commission next year, we shall be able to show a considerable improvement in this respect. As stated in the report, we are now carrying on similar operations in the company's western districts, and I trust that a corresponding saving will be the result. With these few remarks I move the adoption of the report and accounts.

Sir THOMAS GABRIEL seconded the motion.

Mr. DOANE asked what per centage of leakage had been already saved by the operations referred to by the chairman. In reference to the advanced price of coal, he remarked that on the other side of the account there was a great increase in the returns for coke. As compared with last year there was an increase of £29,000 in the coke sales, although only 16,000 tons more common coal had been carbonized. The coke sales in the corresponding half of last year amounted to £64,000; last half year they were £93,000. This was a very satisfactory state of things. Turning to the revenue account, he observed that there was a considerable increase in the rents, the reason for which he would be glad if the chairman would explain.

The CHAIRMAN said it was quite impossible to make a comparison between the two half years, because in the former the Western Company's accounts were not included. As to the effect of the operations in removing superfluous mains, &c., in the City, he might state that a saving of 1 per cent. in the leakage had resulted therefrom. As to the rents, during the last half year the company had let a large number of their cottages at Beckton. They were all occupied now, but they were not so at the time the former account was made up. They were tenanted by the company's own workmen, and were a credit to any company or corporation in the kingdom.

Mr. BIDGOOD said he was happy to hear that the company were carrying out the same process of readjustment of mains in the Western district that they had found so serviceable in the City. Referring to the observations of the chairman, he stated that he resided in St. James's parish, which was lighted entirely with cannel gas by this company. Speaking for himself individually, he saw no necessity for this, and he believed that the parishioners generally would accept as a boon the substitution of ordinary gas for cannel, and that they would effect an economy by it. A notice of motion had been given in the vestry to remit the matter to the consideration of the Works Committee, and he had not the smallest doubt (and in his opinion he was supported by an influential member of the vestry behind him) that they would report in favour of the change.

A SHAREHOLDER said the revision commissioners recommended that an account should be taken by the company of all the gas used at the various stations, not only for business purposes but for testing the quality.

The CHAIRMAN said the recommendation had been attended to.

The SHAREHOLDER remarked that the commissioners reported that the company had, more or less, successfully defended themselves against the objections advanced by their opponents. One of those objections related to the Beckton coke contract. That contract, he believed, had just expired, and he would be glad to know whether it had been renewed on more favourable terms. There was one thing which appeared to him very satisfactory, in view of the fact that the company would have to go before the commissioners again next year, and that was that the figures of the present accounts, as compared with the figures upon which the commissioners based the advance allowed by them in the price of gas, showed that the company were more accurate in their estimate than the commissioners as to the probable increase in the sales of gas. He wished the chairman to furnish the meeting with an explanation of the item on the credit side of the revenue account—"Cannel gas sold in bulk to the London Gaslight Company."

The CHAIRMAN, in reply, said that it would not be fair to the contractors for the Beckton coke to state the exact sum they were to pay under the new contract, but he might state generally that the company had entered into a contract with most responsible parties at a very large increase upon the former price. As to the gas supplied in bulk, it was very well known that for many years the London Company were short of gas storeage, and they had an old contract with the Equitable Company, now incorporated with this company, for a large supply of cannel gas into their holders across the river. Of course, this company were bound in honour to take up that contract, and it was an arrangement with which the directors were pleased, as it paid very well. At the same time it was rendering the London Company a great convenience, which this company were always happy to have it in their power to render.

A SHAREHOLDER asked whether any progress had been made in the disposal of the sites of disused stations.

The CHAIRMAN said there had been no steps taken in reference to the sale of the Horseferry Road station, as the directors hoped by-and-by to sell it in block for the erection of some public building, and to realize a good price for it. But some of the outlying portions, such as the site in Ann Street, the directors were now in treaty for the disposal of, and other sites had been sold. With regard to the question put to him by a very influential member of the Metropolitan Board and of the vestry of St. James (Mr. Bidgood), as to the wish of the inhabitants that the illuminating power of the gas should be reduced, he could assure him that the question had not been lost sight of by the directors, but it would be quite impossible to carry out such arrangements all at once in a large concern like this. If the board could come to terms with the authorities as to lighting the Houses of Parliament, and also with the club-houses, by whom a high quality of gas was required, it certainly would be their desire to effect the equalization of the illuminating power of the gas throughout all the districts of the company.

Another SHAREHOLDER said he had seen it stated that the effect of the legislation of last session was that no revision of price would be allowed wherever a gas company were in a position to pay their shareholders 5 per cent. He wanted to know what effect that would have upon the proposed application of this company to the Board of Trade next year. He had also seen a statement, said to be made by Lord Redesdale, to the effect that the leakage of this company amounted to 750 million cubic feet annually, representing a money value of £140,000. Was that statement founded on fact?

The CHAIRMAN said the first question was very readily answered. The Act passed last session did not apply to metropolitan gas companies at all. With reference to the statement about the leakage of the company, it rested wholly on Lord Redesdale's own authority; the directors of this company did not recognize it in any way, and, for himself, he believed the figures were absolutely inaccurate. In answer to further inquiries, the chairman said that the value of the stock of residuals was estimated at their market price on the day the accounts were made up. There had recently been a considerable rise in the value of these things, especially in coke. It was the intention of the board to make a call on Nov. 1.

The motion for the adoption of the report was then put and carried, and a resolution was passed declaring the dividends recommended in the report.

The SECRETARY brought up a minute from the court of directors respecting the retirement of Mr. Thomas Bush from office as the accountant of the company, after 45 years faithful service, and recommending that a superannuation allowance be voted to him of £450 a year.

The CHAIRMAN, in moving that this minute of the court of directors be approved, said that ever since he had been connected with the company he had looked upon Mr. Bush as one of the most valuable servants that any company could possess. He was a man of thorough integrity, of great intelligence and practical knowledge in his department, and one upon whom he felt he could depend to the very last figure. He was a man, too, who was constantly at work; so sedulously, indeed, did he apply himself to the labours of his office, that he had considerably impaired his health, and the extra work put upon him during the time of the late revision completely enfeebled him, so that he was obliged to send in his resignation. Having been 45 years in the service of the company, in different capacities, until he had raised himself to the high position in which he had long stood, and in which he received a salary of £650, the directors felt that they should only be acting in an equitable way to that gentleman by recommending the shareholders to make him a superannuation allowance of £450 a year.

Mr. YOULE, for some years one of the auditors of the company, seconded the motion, and spoke in terms of the highest praise of the manner in which the duties of Mr. Bush's office were discharged.

Mr. BURLS supported the motion, and added his testimony to the ability and courtesy of the late accountant.

The CHAIRMAN, in putting the motion, stated that there were now two sons of Mr. Bush in the service of the company, and expressed the hope that they would emulate their father's virtues, and succeed, as he had done, in gaining the good opinion of all the proprietors. The directors had had great satisfaction in filling up the vacancy caused by Mr. Bush's retirement by the appointment of a gentleman of the highest possible qualifications, and who came from a family well known in the London gas world. He was the son of Mr. Field, the eminent accountant of the Imperial Company, and those of the directors who were most intimately connected with the finance department had expressed their unqualified approbation of everything that he had done since he came into the service of this company.

The motion was put, and carried unanimously.

On the motion of Mr. STOKES, seconded by Mr. YOULE, a very cordial vote of thanks was given to the directors, which the chairman having acknowledged, the proceedings terminated.

LEEDS WATER-WORKS.—At a special meeting of the Leeds Town Council, on Wednesday last, it was agreed to promote a bill in Parliament next session for the following purposes:—1. To borrow the sum of £200,000 for the purpose of completing the Lindley Wood, Swinsty, and Fewston reservoirs; for constructing an improved pipe track through certain lands near Swinsty; and for constructing an improved road from the highway near Lippers Ford to the Swinsty reservoir. 2. To borrow the sum of £100,000 for the purpose of extensions and improvements, being the estimated outlay for the next 20 years, including the construction of a high-level service reservoir at Tinshill, in the parish of Addle-cum-Eccup. 3. For the acquisition of necessary lands, rights, and properties. 4. For the prevention of the waste and the misuse and the contamination of the water of the corporation. 5. For the extension of the limits of supply to the township of Roundhay, and such other places adjacent to the existing limits as may be deemed hereafter necessary. 6. To define the meaning of the words "net annual value."

COMMERCIAL GAS COMPANY.

The Half-Yearly Ordinary General Meeting of this Company was held on Friday, Oct. 3, at the London Tavern—THOS. BRUSHFIELD, Esq., in the chair.

The SECRETARY (Mr. Jaques) having read the notice convening the meeting the following report and statement of accounts were presented:—

The directors report that the outlay for repair and maintenance has been considerable during the past six months, and the cost has been greatly increased by the high price of material and labour.

The accounts show a balance of £25,254 17s. 11d. available for dividend, and the directors recommend that a dividend of 5 per cent. for the half year ending the 30th of June last (less income-tax) be declared.

It is with great regret that your directors announce the recent death of their old and much-esteemed colleague and chairman, Mr. James Holbert Wilson.

The directors have, under the provisions of the company's Act of Incorporation, elected T. W. Ratcliff, Esq., to the vacant seat at the board.

1.—CAPITAL: *State of the Account at the End of the Six Months ending June* 30, 1873.

Statute, or Authority, under which raised.	Description of Capital.	Total Paid-up Capital.
Commercial Gas Act, 15 & 16 Vic., c. 155.	Stock.	£448,875 15s.

2.—REVENUE: *Account during the Six Months ending June* 30, 1873.

RECEIPT.

Balance brought forward from last account		£808 2 11
Ditto of uninvested reserve-fund, brought forward		9,287 8 3
Sale of gas—		
At 4s. per 1000 feet	£66,782 14 9	
Public lighting and contracts	7,875 19 10	
		74,658 14 7
Sale of residual products—		
Coke	23,813 9 9	
Breeze	463 15 9	
Tar	1,205 5 6	
Ammoniacal liquor	1,962 12 10	
		27,445 3 10
Miscellaneous receipts		672 7 10
		£112,871 17 5

EXPENDITURE.

Management—		
Directors allowances	£750 0 0	
Salaries of secretary and clerks	2,010 13 11	
Collectors commission and pay	947 2 3	
Rent, rates, and taxes of offices	50 0 0	
Stationery, printing, and general charges	614 8 9	
Payment to auditors	75 0 0	
		£4,447 6 11
Manufacture of gas—		
Coals, including carriage, dues, &c.	51,259 14 7	
Purifying materials	566 4 9	
Supervision and labour	13,290 9 10	
Ordinary repair and maintenance of premises	8,494 3 2	
Rents, rates, and taxes of manufactory	1,962 2 10	
		75,572 15 2
Distribution, including service mains, pipes, &c.—		
Ordinary repair and maintenance		6,853 4 11
Meters—		
Restoring and replacing		659 13 2
Law and parliamentary charges		103 19 4
Balance		25,254 17 11
		£112,871 17 5

Balance, as above	£25,254 17 11
Required for dividend	22,024 18 1
Balance	£3,229 19 10

Reserve-fund, £31,524 3s. 7d., invested in £34,314 9s. 6d. Consols.

The CHAIRMAN said that before going into the business of the meeting he thought it the duty of all present to make some recognition of respect to the memory of their late much-esteemed colleague and chairman, Mr. James Holbert Wilson, who, since the company last met, had been taken away, and he (Mr. Brushfield) elected in his stead. It was at first suggested that merely a resolution from the board of directors should be conveyed as a mark of condolence to his family; but, after consideration, the board concluded that the most respectful memento to his memory, and one which would be much more satisfactory to his friends, was that at a general meeting of the company there should be a resolution passed by the whole body, and such a resolution he would submit. He (the chairman) had known Mr. Wilson for many years, and he could only say that the company would not have existed or been in existence now had it not been for his late friends Mr. C. Salisbury Butler and Mr. Wilson. At one time the company was nearly lost, and he remembered when 60 shares were offered to him for 60 half-crowns. But he stood by the enterprise with Mr. Wilson and Mr. Butler. The thing then went on, although it looked like a sinking ship. Had it not been for the influence of Mr. Wilson, in all probability the company would have been entirely shipwrecked. The personal guarantee of Mr. Butler and Mr. Wilson had actually to be given for the payment of the bills for coals and iron before a supply could be obtained. Under these circumstances, Mr. Wilson's name deserved to be held in grateful remembrance by all who had since reaped any benefit from the undertaking.

The resolution intended to be proposed was as follows:—"That this meeting has heard with the greatest regret the announcement of the death of James Holbert Wilson, Esq., who, as director, deputy-chairman, and chairman, has been connected with this company for a period of upwards of 30 years. They desire to record their high appreciation of his courteousness and urbanity, and offer to his relatives their expression of profound sympathy in the loss they have sustained."

Mr. ATRELL said nothing could give him greater pleasure than to move that the resolution read be forwarded to the family of their late friend and chairman, Mr. Wilson. No comments he could add would embellish the opinion entertained of him by the company, and he therefore had great pleasure in moving the adoption of the resolution.

Mr. RHODES seconded the motion.

The CHAIRMAN: This resolution has been proposed and seconded, and no greater compliment could be paid to the departed Mr. Wilson than has now been done. There is not a director, shareholder, official, or servant of this company but who ought to have embalmed deeply in his memory the name of James Holbert Wilson.

The resolution was carried unanimously.

The CHAIRMAN, in proposing the adoption of the report and statement of accounts, said very little of importance had occurred since the previous meeting. There appeared to be a sort of lull among those who had for some time been agitating the question of the supply of gas, and no doubt the price of coal and labour had prevented them from doing that which they were very anxious to do at a time when those things were cheap. The authorities at the West-end were continually talking about amalgamation, and a great many of the shareholders of the Commercial were anxious to know how the company stood with regard to that question. It was the firm determination of the directors not to amalgamate with any other company whatever. No company stood higher in the estimation of those who were acquainted with gas matters, and he was satisfied that their property was almost, if not quite, the best in London. The directors would do all they possibly could to preserve the integrity and unity of the company. He regarded what had already been done in the way of amalgamations as a very perilous matter, and until it was proved that a great mistake had not been committed, the directors of this company would not entertain any suggestion on the subject. It was impossible for any company to stand better than the Commercial at present.

The motion was seconded by Mr. RHODES.

Mr. BEETON asked why the item of £9287 had not been invested.

The CHAIRMAN said it was useless to produce gas at a cheap rate unless the distribution was efficient, and a year or two ago it was found that a very large per centage of the gas was lost by leakage. The engineer was consulted, and he said a certain sum would be required for improvements, and suggested that it would be best not to invest any more of their capital, but to let it float until they were in better circumstances. That had been done.

Mr. BEETON: What has become of the £11,600 that has been subscribed since the last meeting?

The CHAIRMAN: Part of it will come into this half year.

Mr. RHODES expressed a hope that the directors would not let the parish authorities run away with the profits of the shareholders.

The CHAIRMAN: You need not fear. If all your money is invested in the Commercial Gas Company, you are a lucky man.

Mr. RHODES: What is the leakage now?

Mr. R. JONES: About 12 per cent.

The CHAIRMAN said he recollected when it was 33 per cent. During the past season the directors had made one of the best, if not the very best contract that had been made by any gas company.

The motion was carried unanimously.

On the motion of the CHAIRMAN, seconded by Mr. JONES, a dividend of 5 per cent., less income-tax, was declared for the half year ending the 30th of June last.

Mr. FAIRCLOUGH moved a vote of thanks to the chairman and to the directors for their continued attention to the affairs of the company, and for the way in which the business of the meeting had been conducted. He thought they must congratulate themselves upon the appointment of Mr. Brushfield as their chairman. He begged, therefore, to move a vote of thanks to the chairman and directors.

Mr. RHODES seconded the motion, which was cordially agreed to.

Similar votes were accorded to the auditor, the engineer, the secretary, and the officers of the company.

Mr. R. JONES (the engineer), in responding, said the reserve-fund of the company was applicable to two things—to the making up of dividend, and to the cost of extraordinary work. During the last twelve months, work of that description had been done to a great extent. Nearly eight miles of increased sized mains had been laid, and the reserve-fund was applicable to that purpose. It would have been useless to invest the money one half year, and draw it out the next. It had, therefore, been kept floating.

The proceedings then terminated.

PONTYPOOL PUBLIC LIGHTING.—An adjourned meeting of the Pontypool Local Board, excluding the members who are shareholders in the Gas and Water Company, was held on the 19th of September—Mr. Havard in the chair—to consider the reply of the company in reference to the future supply of the public lights. At a meeting on the 12th ult., Mr. Hair, the company's secretary and manager, attended and laid before the board a tender for the alteration of the street-lamps. It was to the effect that the company would undertake to make the required alterations to the lamps, and supply a Sugg's governor (regulated to burn 5 feet per hour), lever lamp tap, brass T-piece, and all tubing required inside the lamps, at a uniform charge of 10s. 6d. per lamp, for all lamps that would bear converting, and where new lamps were required they would supply the new copper-lined lamp (similar to those already supplied by the company to the board), painted and glazed, at a further charge of 21s. each, including the alteration to pillar top. All new tubing required to renew worn-out services to be supplied at the usual trade list prices. Upon this a motion was made that the lamps should be lighted by meter at 4s. 6d. per 1000 cubic feet; but an amendment to the effect that the board should give the company £4 15s. a year for lighting each lamp, the company to bear the cost of alterations, lighting, &c., found the most favour, and, having been carried, it was agreed to submit the terms contained in it to the directors of the company, and to hold another meeting on the following Friday to receive their reply. At this adjourned meeting a reply was read from Mr. Hair, stating that the company would admit of no abatement in the terms on which they proposed to supply the public lamps. A warm discussion followed; and Mr. Conway moved the following resolution:—"As a meeting of the committee appointed to consider the terms for the supply of gas for public lights, the committee, by majority of one, decided to accept the offer of gas company on condition that the company made the contemplated alteration at its own expense, the minority of five protesting against such offer. In reply to this offer, the gas company rejected the proposal, and declined to make any alteration or abatement of terms previously offered. Under the circumstances, and considering that Mr. Hair, in his letter of the 14th of July, proposed to supply 20,000 feet of gas per lamp at £4 per annum, which is 4s. per 1000, the committee advise the board to accept this price on condition of the gas company supplying by meter, and also advises the board to take to the lighting, extinguishing, cleaning and repairing, and necessary alterations to the said lamps. These terms are identical with the offer of the Abersychan Gas Company to the Abersychan Local Board. If these terms are rejected by the gas company, the committee advises that the question be left to the decision of the ratepayers assembled in public meeting, to be convened for the purpose." This was seconded by Mr. E. H. Davies. Mr. Haskins proposed an amendment, that the board should pay 4s. 6d. per 1000, the price demanded by the company. Mr. J. F. Williams seconded. The votes were—For the amendment, 4; for Mr. Conway's motion, 7. At the ordinary monthly meeting of the board on the 3rd inst., it was stated by the chairman that the gas company refused to supply the public lamps at less than 4s. 6d. per 1000, and, after a long discussion, these terms were agreed to (by a majority of one), and a Lighting Committee was appointed to carry out the arrangements.

CRYSTAL PALACE DISTRICT GAS COMPANY.

The Ordinary Half-Yearly General Meeting of the above Company was held on Tuesday, the 23rd of September, at the London Tavern, Bishopsgate Street—Professor ERASMUS WILSON, F.R.S., in the chair.

The SECRETARY (Mr. Magnus Ohren) having read the notice convening the meeting, the report was presented as follows:—

The directors have to report that the business and progress of the company have been satisfactory during the half year.

The price of coal, iron, labour, and all materials connected with the manufacture of gas, have maintained their largely advanced prices; but, on the other hand, much higher prices have been obtained for the residual products.

Up to the present time the directors have not found it necessary to increase the price of gas to the general consumers.

The application of the company to Parliament for an increase of capital was successful.

The reports of the chemical adviser of the company and of the medical officers of the parishes supplied by the company, on the purity and illuminating power of the gas, continue to be satisfactory. During the half year 13 visits have been made to the works (without notice) by Dr. Letheby on the part of the company, and Dr. M'Cormack on behalf of the parish of Lambeth; and the average result of these examinations has given an illuminating power of 14·99 standard sperm candles.

The balance-sheet for the half year to the 30th of June last, appended to this report, shows the financial position of the company. The profit for the half year is £7361 1s. 1d., which, together with £2738 15s. 4d., the unappropriated profit of the preceding half year, makes the available balance £10,099 16s. 5d. Out of this sum the directors recommend the declaration of a dividend at the rate of 6 per cent. per annum on the preference capital, a dividend at the rate of 7 per cent. per annum on the ordinary 7 per cent. capital, and a dividend at the rate of 10 per cent. per annum on the original capital, all free of income-tax; and that the balance of £3041 be carried forward to the profit of the succeeding half year.

Profit and Loss, Half Year ending June 30, 1873.

Dr.				*Cr.*			
To Amount of coals carbonized		£16,595	5 11	By Private rental, Lady-day quarter	£16,023 9 4		
Lime, oxide, and labour		105	12 8	Public ditto, ditto	1,505 15 1		
Trade charges		1,508	11 4	Private rental, Midsummer quarter	8,035 16 8		
Horses and carts		93	12 0	Public ditto, ditto	1,338 10 2		
Mains renewal account		185	3 0			£26,903	11 3
Works renewal ditto		1,741	4 5	Meter-rental		470	7 3
Meters renewal and repairs account		589	18 5	Coke made for sale	£9,751 7 6		
Rent, rates, and taxes		863	14 10	Breeze ditto	79 2 1		
Directors and auditors fees		530	0 0	Tar ditto	639 18 7		
Salaries and collectors commission		1,605	4 2	Sundries	115 7 4		
Wages		3,447	15 7			10,585	15 6
Interest on loans		123	0 8	Ammoniacal liquor and sulphate of ammonia		1,007	2 2
Bad debts and allowances on collection		185	8 11				
Law charges		1,181	3 2				
Retort account		750	0 0				
Contingent-fund		2,100	0 0				
Profit		7,361	1 1				
		£38,966	16 2			£38,966	16 2

Balance-Sheet, June 30, 1873.

Dr.				*Cr.*			
To Proprietors for paid-up capital—				By Amount for plant		£181,179	1 11
5000 preference shares, at £10 per share		£50,000	0 0	Freehold land		8,886	17 8
5000 original shares, at £10 per share		50,000	0 0	Retort account		805	8 2
10,000 ordinary 7 per cent. shares, at £10 per share	£100,000 0 0			Stock on hand		18,148	1 8
Less amount uncalled	3,618 0 0			Amount due from sundry persons		993	5 10
		96,382	0 0	Invested in Consols from contingent-fund		134	14 0
Loans on debenture		7,015	0 0	Private gas and meter rental, Midsummer quarter		7,971	2 10
Amount due to sundry persons		10,997	5 2	Arrears		194	4 3
Contingent-fund—Uninvested	£8,180 15 10			Public rental, Midsummer quarter		1,338	10 2
,, Invested	134 14 0			Fittings		50	10 3
Interest on amount invested	2 4 3			Balance at bankers		15,203	18 11
Appropriated from profit and loss for contingent-fund	2,100 0 0						
		10,417	14 1				
Profit unappropriated		2,738	15 4				
Profit and loss		7,361	1 1				
		£234,911	15 8			£234,911	15 8

Appropriation of Balance.

Balance brought forward from last account		£2,738	15 4	Dividend on preference share capital, at 6 per cent.	£1,500 0 0		
Ditto of profit and loss		7,361	1 1	Ditto on ordinary 7 per cent. capital, at 7 per cent.	3,058 16 5		
				Ditto on original share capital, at 10 per cent.	2,500 0 0		
						£7,058	16 5
				Balance to be carried to next account		3,041	0 0
		£10,099	16 5			£10,099	16 5

The CHAIRMAN, in moving the adoption of the report, said in the course of his remarks that the shareholders had no doubt read the directors report and balance-sheet of the company with attention, and, perhaps, with some degree of anxiety, considering the state of society at the present day, particularly with reference to those articles which were so necessary for carrying on the business of a company like theirs. For many years past they had been able to begin the first paragraph of the report as at present, and it was very satisfactory that they could do so on the present occasion. The next paragraph pointed out one of those difficulties with which, in common with the rest of the world in this country, they had had to contend, namely, the high prices of coal, iron, &c. He was happy to say that with reference to their works they were never in a more perfect condition, and in better working order than at present. They were greatly indebted to their engineer, Mr. James Watson, for such a satisfactory state of things, and in reply to a question which he (the chairman) had put to him, he said, "We may reasonably expect not to go into the market for iron for new buildings or gasholders for at least two or three years to come." By that time he (the chairman) trusted that iron would be at a more moderate price than it now was, although he hoped that they would not have to get their iron from America, where it was now being largely produced. Up to the present time the directors had not had to increase the price of gas to the general consumers. They had had to labour hard at this point, but happily they had been successful up to the present. They fortunately possessed contracts for coal at very moderate prices, so that the price of coal was reasonable—even cheap—as compared with the present time. The price of coke and tar had also increased. Coke had attained the very high price of 28s. per chaldron, and it was now selling freely at 22s. It was the favourable contracts for coal, iron, service-pipes, &c., &c., in addition to the high price obtained for coke, and other products, which enabled them to supply gas at the present price; they must also remember that the directors had from time to time reduced the price of gas whenever they found by their accounts that they were able to do so; and no one, looking at the accounts before them, would have a doubt that had it not been for the high price of coal a reduction of at least a penny per 1000 would have been made this half year. Now, 1d. per 1000 meant a reduction from the company's profits of about £1000 per annum, and therefore that £1000 per annum, which would have gone into the pockets of the consumers, was going towards the extra payment for coal. With respect to their new Act, they had now got capital sufficient for 15 or 20 years, and it was a blessing that they had not to ask the present rulers in Parliament for an increase of price. Their maximum price was 6s. per 1000, and they were now charging the general consumers 4s. 2d. per 1000, which left a large margin should they require to make any alteration of price. He concluded a somewhat lengthy speech by moving—"That the report of the directors, and the balance-sheet confirmed by the auditors, be received, adopted, and entered upon the minutes."

The motion was seconded by Mr. CURTIS, and carried unanimously.

The DEPUTY-CHAIRMAN then moved—"That a dividend at the rate of 6 per cent. per annum on the preference capital, a dividend at the rate of 7 per cent. per annum on the ordinary 7 per cent. capital, and a dividend at the rate of 10 per cent. per annum on the original capital, all free of income-tax, be now declared, and be made payable forthwith." He said it was a pleasure to him to move that the usual dividend be declared, and to remind them that an amount had been carried forward which would make their dividend safe for the next half year, and that, although the pinch might come on the June half year of 1874, he hoped that they would be able to pay their dividend then without increasing the price of gas. He did not think coals would be so dear, as, although they had paid as high as 22s. per ton for Newcastle coal, he had just made a contract for this company for a good gas-making coal at 16s. 6d., f.o.b.

The motion was seconded by Mr. GEORGE LIVESEY, and carried unanimously.

The CHAIRMAN then moved—"That the salary of the secretary be increased by the amount of £50 per annum." He said perhaps some of the shareholders might think that, considering the present price of coal, &c., this was hardly the time for the directors to propose an increase of salary; but when he told them that no addition had been made to the secretary's salary for the last eight years, and that the proposed addition was but a small item, he thought that any objection they might be prepared to make would be removed, and that they would conclude that the directors were quite right in their proposition. He need only say that Mr. Ohren was a valued and well-tried officer of the company, and that, having been so many years connected with the company, his tact and business qualities were almost as well known to the shareholders present as to the directors themselves.

The motion was seconded by Mr. JOSEPH HADLAND, and carried unanimously.

Mr. OHREN, in reply, said he sincerely thanked the chairman for the kind manner in which he had moved the resolution. He thanked the directors for the addition they had proposed to his salary, and he thanked the shareholders generally for their unanimous approval of that resolution. He had now been connected with the company for about 18 years, and from the first he had studied to promote the interests of the company in every way, and he promised them, so long as he had the honour to serve them, he would do all he could for the continual prosperity of the company.

After a few observations from some of the shareholders, in which they expressed their great approval and satisfaction with the report, &c., and the transaction of some routine business, including votes of thanks to the directors, auditors, and officers of the company, the meeting concluded with a cordial vote of thanks to the chairman, which was carried *nem. con.*

ABERSYCHAN PUBLIC LIGHTING.—The gas company of Abersychan having addressed a letter to the local board of that town, requiring, first, that from the 25th inst. the gas for the public lamps shall be burned by meter, one meter to be fixed (at the cost of the board) to every sixth lamp; second, that the board shall pay 4s. per 1000 feet for the gas; third, that the board shall light, extinguish, and clean the lamps; and the company accommodate and repair the lamps at the expense of the board, as heretofore—the board have decided to take the matter into consideration at their next meeting, and in the meantime have ordered the erection of two lamps, one having a meter affixed to it, in order to ascertain the quantity consumed, and have directed the Lighting Committee to report what other new lamps are required.

BURSLEM GAS SUPPLY.—At the annual meeting of the Burslem Local Board of Health, on the 24th ult., the report of Mr. Blackshaw, the gas examiner, was read as follows:—"I have the honour to submit to you my third annual report in connexion with my duties as gas examiner to your board. During the months of December, January, February, and March the gas was very unsatisfactory, the average for each month being below 13 candles. This was attributed by the company's manager to the difficulty experienced in getting the proper kind of coal, owing to its scarcity. The mean illuminating power for the year has been equal to 13·44 candles, the maximum being 16·15, and the minimum 11·0 candles. This average is less than that of the preceding year by 1·23 candle. The change made in the process of sulphur purification has proved highly successful. The mean amount for the year was equal to 14·9 grains in the 100 cubic feet of gas, the lowest being 7·67, and the highest 37·04 grains. The gas, when tested, was always free from sulphuretted hydrogen. Owing to a breakage of the ammonia saturator, no testing took place for ammonia till within the last few months. The quantity found was greatly in excess, the average, since May, exceeding 10 grains to the 100 cubic feet of gas. The company are, I am informed, taking measures to reduce the amount of this impurity. For taking the photometric observations, Sugg's 15-hole standard Argand burner was used, and, in testing for sulphur, the apparatus known as the referees test; but as this apparatus always eliminates a larger amount of sulphur than that prescribed by the Burslem Gas Act (Dr. Letheby's), a reduction of 1-6th has been made from the results so obtained."

CORK GAS CONSUMERS COMPANY.

The Ninth Ordinary General Meeting was held on the 11th ultimo—Mr. T. MAHONY in the chair.

The SECRETARY (Mr. Denny Lane) read the following report:—

Gentlemen,—We place before you herewith the accounts of the company for the half year ending last Midsummer. We regret to state that, for the first time for over 15 years, your business has not been attended with the profitable returns you should expect on the capital invested. The balance of the revenue account is £1591 12s. 10d., and when in the profit and loss account the usual deductions are made from this sum, the balance of profit remaining on the half year is only £622 12s. 2d.

The principal cause of this great diminution in your profits is the extraordinary and unparalleled advance in the price of coal—an advance which you were all more or less prepared for by our previous reports, and by your own personal experience. In consequence of the contracts which we had on hands at lower prices, your concern did not feel the effect of this advance fully until the past half year, when nearly all the coal used had to be paid for at a greatly enhanced price. We were disappointed in the delivery of coals we had contracted for—one of those early contracts is now in course of being completed; and in another instance, the contractors having disputed their liability, the case is referred to arbitration. In fact, the half year's coal, which cost only £7236 in 1872, cost £12,387 in 1873—an advance of £5150.

Your profits were diminished not alone by the price of coal, but also by the impossibility of procuring the kinds of coal which you had previously used. The difficulties with their workmen were so great, that the colliery proprietors, with whom you had previously dealt, absolutely refused to contract for a supply of coal for the winter and spring of 1872-1873. The production of coke being in excess of the sales, the stock accumulated during the winter months, which prevented us from getting as large a price as otherwise we might have done, and caused a deterioration and waste in this product.

The residuals produced £5367 last half year, as against £4225 in the corresponding period of 1872. The increased cost of coals, less residuals—or say £4000—will sufficiently account for the deficiency in your profits. Indeed, only for this circumstance you would have been able to declare your ordinary dividend without trespassing much on your reserve-fund.

The income for gas consumed in the public lamps has again been reduced, being £1405, as against £1547 for the corresponding period—a change caused by the very late hours at which the lamps were lighted, and the very early hours at which they were extinguished. For a portion of the year the lamps were put out some hours before daybreak, and not lighted until some time after nightfall.

In the private consumption there is a small decrease in the quantity sold. This has been caused by the shorter hours of labour in manufactories, the suspension of work on Saturday afternoons, and the earlier hours fixed for closing public-houses. The small increase you made in the price of gas has, however, compensated for the decrease in quantity, the half year's rental being £13,332, an increase of about £150 over the corresponding period.

There is another item in the revenue account to which we would wish to direct attention—viz., the very heavy rates you have to pay. A great portion of this expenditure has been placed on you since you obtained your Act of Parliament, which limited your price of gas; and even since you entered into your last contract with the corporation. In fact, before 1868 your taxation averaged £600 a year, and for the past year it reached £2267.

An Act was passed last session authorizing the Board of Trade to permit gas companies to advance their prices in order to meet the greatly increased cost of coal. A clause was, however, inserted in the Act limiting the dividend to 5 per cent. for any half year in which the advanced price was charged. This limitation in provincial gas companies seems inequitable, when metropolitan companies are allowed to advance their prices, so as to pay 10 per cent. The Act, however, is only a temporary measure, and unless the price of coal falls will, we trust, be amended by Parliament. Notwithstanding the temporary limitation of dividend, we have thought it more conducive to your interests to give notice of our intention to make this application, in order to put ourselves in a position to avail of the provisions of the Act, if it is deemed necessary.

In the current half year we expect an improvement in our profits, from the fact that we are now obtaining a higher price for coke, which we hope to maintain during the winter. We will also have the advantage resulting from the new apparatus, which is now almost completed, in a lower cost for purification, and a larger yield of ammonia. The examination, repair, and, where necessary, the renewal of our service-pipes, will also diminish the quantity of gas not accounted for.

You have now invested in railway debentures £5750, a sum sufficient to cover your reserve-fund of £4929, and your insurance-fund of £793. You have, therefore, undivided profits, out of which you can pay a dividend, which we recommend shall be at the rate of 6 per cent. This would amount to about £3620, taking from your reserve-fund about £3000, and would still leave about £2000 remaining. With the improvement which we expect in the current half year, we hope to be able to declare a similar dividend in March.

Since your last meeting, your late accountant pleaded guilty to the charge preferred against him, and under the order of the court we have obtained possession of the foreign securities which he purchased with the money taken from the company. We have discovered some other defalcations of his amounting in all to £91 1s. 8d., and beyond this on the most careful examination of the books, no further deficiency can be discovered. The expenses of his apprehension and trial were very heavy; but as there are large assets in the Court of Bankruptcy, and the Court of Queen's Bench has awarded us our expenses, we trust that the ultimate loss on this transaction will not be large.

Since your last meeting, Mr. James Murphy, one of your directors, resigned his seat at the board. We have filled up the vacancy so created, by the selection of Mr. D. Sheehan, your late auditor.

Two of your directors, Mr. M'Ostrich and Mr. Sheehan, go out of office by rotation, are re-eligible, and offer themselves for re-election.

Engineer's Report to the Directors.

Gentlemen,—I beg to report that I inspected your works in March, in June, and again in August of this year.

The whole of the extensions have now been completed, with the exception of some minor details, which are being done by your own men.

The sulphate of ammonia apparatus has been complete and in satisfactory action for the last two months.

The several contracts for purifiers, washer, scrubber, and new retort-house are all complete, and an excellent job has been made so far as one can judge of apparatus not yet in operation.

I have had the accounts before me, and it is satisfactory to state that there are no extras to be charged.

These extensions have increased your manufacturing capacity, in all material items, to 30 or 40 per cent. beyond present requirements, and will enable you to manufacture gas with greater economy and efficiency.

I will be across this month again, and hope to have the new purifying arrangements in action before I leave, and all fully tested.

When last in Cork I requested that the gasholders and all apparatus on the works be tested for staunchness. You should call for the result of this test; and I now suggest that tests should be made of the mains is several districts, and an accurate test made of the gas sent out hour by hour on Sunday, when there is least gas burning, that from the information so obtained we may, if necessary, take steps to reduce the amount of gas lost, which your secretary informed me is on the increase.

If it were not for the high price of coal and other materials, I would be able to congratulate you on the position of your property; in the absence of this we must make the most of present circumstances, and wait for better times.

(Signed) GEORGE ANDERSON.

Capital Account, June 30, 1873.

Dr.		*Cr.*	
To Share capital of the company	£150,000 0 0	By Amount paid on shares	£124,261 0 0
Debentures	17,950 0 0	Debentures	17,950 0 0
			£142,211 0 0
		Amount due on uncalled capital and shares not registered	£25,023 0 0
		Amount due on registered shares	716 0 0
			25,739 0 0
	£167,950 0 0		£167,950 0 0

Revenue, June 30, 1873.

To Coals	£12,387 1 11	By Rental, March quarter	£9,213 14 3
Labour	2,243 0 6	Ditto June "	4,119 0 0
Wear and tear	835 4 9		£13,332 14 3
Public lighting	266 17 9	Public lighting	1,405 18 9
Lime, &c.	207 2 10	Residuals	5,367 16 3
Salaries	921 2 3		
Rents	141 16 3		
Rates	1,111 2 10		
Advertising and stationery	94 7 1		
House repairs	1 13 7		
Office expenses	108 15 7		
Office furniture	1 11 1		
Auditors	20 0 0		
Directors	175 0 0		
Profit and loss	1,591 12 10		
	£20,106 9 3		£20,106 9 3

Profit and Loss.

To 30th dividend	£4,558 10 0	By Balance	£4,262 6 8
Interest—		Reserve-fund for balance of 30th dividend	296 3 4
Debenture interest	£374 14 10	Sundries	211 15 7
Bank, &c., "	163 10 8	Revenue	1,591 12 10
	538 5 6		
Charges	230 16 9		
Insurance	36 14 0		
Reserve for bad debts	200 0 0		
Directors, Maguire testimonial as voted	175 0 0		
Balance	622 12 2		
	£6,361 18 5		£6,361 18 5

Balance-Sheet, June 30, 1873.

To Capital account—		By Permanent investment to Dec., 1872	£126,071 17 5
Shares	£124,261 0 0	Extensions from above date to June 30, 1873, viz.:—	
Debentures	17,950 0 0	Works	£4,949 13 2
	£142,211 0 0	Mains	10 9 10
Due to sundry persons	9,902 3 7	Services	99 7 1
Dividends unclaimed	253 11 7	Public lighting	12 16 9
Insurance-fund	793 10 2	Meters	5 4 3
Reserve-fund	4,929 5 3	Engineering	75 0 0
Bank, current account	6,168 18 0		£5,143 11 1
Reserve for bad debts	181 19 11	Less account—meters and services	118 1 2
Profit and loss	622 12 2		5,025 9 11
			£131,097 7 4
		Due by sundry persons	2,212 17 5
		Suspense account, including further expenses since Dec., 1872, on account of trial, and balance cost of pursuit	£352 2 9
			1,317 12 4
		Paris, Lyons, and Marseilles R. R. Co. Bonds, recovered from late accountant	2,895 6 6
		Rental	10,037 3 6
		Public lamps	1,428 14 9
		Stock, coals, meters, mains, services, &c.	10,323 18 10
		Cork and Macroom R. R. Co., for amount invested in their debentures	2,750 0 0
		Cork and Passage R. R. Co., for ditto	3,000 0 0
	£165,063 0 8		£165,063 0 8

The CHAIRMAN, in moving the adoption of the report, traced at some length the history of the company, and then referred to the difficulties with which the directors had recently had to contend in connexion with the rise in the price of coals, which he stated had caused during the past half year a difference in excess of £5150 in the working expenses over the corresponding period of last year. The reduced price at which the company contracted for the public lighting was in the expectation of there being an increased consumption, and it was understood to be the intention of the corporation to increase the number of lamps so as to pay as large a sum for gas as they paid under the old system of contract. But instead of its payment amounting in the half year to £2200, as formerly the gross income from this source was only £1400. The price for gas at the present scale was lower than the scale the corporation sought power from Parliament to charge the city by the bill they lodged themselves, at a time when the rates they paid were only £600 a year. The company were now so assessed that their taxation amounted to nearly £2300, or nearly four times the sum they were paying when they applied for their Act of Parliament. The net revenue received for the public lamps scarcely exceeded this amount. The contract, however, expired at the end of the current half year, and the board were sure the corporation would see the justice of dealing liberally with the company in a new contract, as was done in other cities. The chairman proceeded to refer to the legislation of last session, and quoted some of the observations made by Dr. Phelps, of the Cambridge Gas Company, in relation to the Gas and Water Works Facilities Amendment Act. The directors of this company felt warranted in promising the shareholders the same dividend next half year as on the present occasion, but they wished to be put in such a position that they could recoup themselves by application to the Board of Trade, and declare a dividend at the rate of 5 per cent., if it were necessary. Of course, if unnecessary, they need not use it at all. The directors thought it would be a more gratifying thing for a shareholder to know that although he did not get his full dividend, still that the price of gas might be raised so as to give him a certain 5 per cent. for his money. If the directors increased the price of gas they would be able to get a large price for public lamps, and they also looked for increased prices from the public. They wanted in this nothing beyond what other companies were doing. The chairman concluded by explaining, in answer to several inquiries made of him, various items in the accounts.

Mr. FOLEY seconded the motion for the adoption of the report.

Mr. USBORNE, in a speech of some length, criticized the figures of the accounts, and maintained that it was a most unwise policy on the present occasion to pay a dividend at all, inasmuch as according to his analysis the company had not earned it, and had not assets with which to pay it. Their securities at present would not discharge their own bank liability, and there was nothing so unwise as to borrow money in order to pay a dividend. He believed the dividends hitherto had been paid out of capital. Had there been a depreciation-fund, they would now be in a very much better position. He did not accuse the directors of intentional misrepresentation, but he asked why, when a depreciation-fund was required by their own Act of Parliament, that depreciation-fund was omitted in every account submitted to the shareholders. It was a most important element of the security of every shareholder. But what was the fact? The company commenced with a capital of £40,000; they had swollen that capital from £40,000 to £160,000, and they required at least £10,000 a year profit to pay a dividend of even 5 per cent., while the only profit for the half year presented by this report was £622. Such a statement as this ought to alarm every shareholder, and demanded the reconstruction of the management in every shape and way. Where did they want a greater proof of the necessity than in the complaint that they had to pay £2600 taxes. On what representation were they so taxed? They were assessed by their own papers—by their own assessment of their profits. On asking the town-clerk how it was they were rated to this enormous amount, the answer was, that it was on their own representation of their profits. He (Mr. Usborne) maintained that the profits divided by this company had been a snare and a gross delusion. He believed that if a proper depreciation had been put upon this increase of expenditure of £27,000 since 1871, a dividend would have come out of the accumulated depreciation-fund, instead of coming now at the eleventh hour out of funds, which he maintained were altogether unremunerative. He moved an amendment protesting against the adoption of the report, for the following reasons:—First, that it exhibits a most deplorable position of the company without suggesting any change to amend the management; secondly, that the advice to sell the securities held by the company, to pay a dividend of 6 per cent., amounting to £3600, while the report exhibits only £620 as the earnings of the company, is unsound upon principle, and also contrary to mercantile propriety, especially where such securities are absolutely required to discharge liabilities of much larger amount; thirdly, that from the aspect of the company, as presented by the directors in this report, a bold and comprehensive reconstruction is absolutely necessary, combining economy with efficiency. Therefore, as the shareholders desire not only to improve, but to avoid any action that may prove an injury to the value of what, under careful and able management, ought to have been a good property, they suggest to the directors not to oppose an adjournment for 14 days, that the report may be amended, to inform the shareholders how the present directors propose to improve the management, to adopt economy, to avoid speculative outlay, to discharge or reduce the heavy liabilities of the company, and to consider the advantages and economy that will arise by moving the offices from the South Mall to the works. He wished every shareholder to know that though he dissected the accounts as dispassionately as he could, he did not take a gloomy view of the future of the company. He believed that if conducted on a sound, economical, and efficient basis, there was an element in the undertaking that would give the shareholders a fair but not excessive remuneration for some time to come. But when he saw their rates were £2200, that the corporation had been getting gas at less than its cost, and that the salaries were £910 upon receipts of £20,000, and when he looked upon these as per centages off the amounts received, he unhesitatingly said to one and all that there was an opportunity and a necessity for an economy which ought to be inaugurated at that very meeting.

Mr. HAYES seconded the amendment.

Mr. ANDERSON (the engineer of the company, and a large shareholder) replied to Mr. Usborne. He said it had been with his entire concurrence that a depreciation account had not been charged against them; and why had he sanctioned that? Because the company, a number of years ago, bought for about £27,000 the works of the previous gas company, which cost them something like £60,000. Though it was quite correct that depreciation-funds were generally established, and that this company in their wisdom had obtained in their Act of Parliament the power to establish such a fund whenever they wished, they had not thought it necessary yet to do so, because from the excellent bargain they made their capital was small in proportion to their business, and they had chosen to give their shareholders the benefit of all they had been making. He wished to state this because it would appear, if they had to put aside a depreciation-fund, their property was not worth as much as it really was, and if they did put by such a fund, they could not have received such dividends as they had obtained. They had all along had those dividends, and had earned them; and if it had not been for the excessive increase in the price of coals, labour, and other things, they would now be in the same position in which they were in past years. After this company had been two or three years established, and had got rid of the old company, they made 10 per cent. profit, because not only did they pay the maximum dividend of 8 per cent., but they paid back dividends for years when only 5 per cent. had been realized. They paid that to their shareholders because they did not want to create a depreciation account, their property being such that it was worth more than the figure at which it was entered in their books. There was another reason which hinged on that. If they wrote down their capital and made it small, was it fair to suppose, if ever they had to sell their works, they would get as much for them as if they stood on their books at their fair and legitimate value? Suppose somebody wished to buy their works—if some enterprising firm wanted to get their business—the company could only get simply what their accounts showed, and some bonus on that for goodwill. But the company's books had never shown the actual state of facts, from the circumstances he mentioned to them—that for £27,000 they bought works which were worth £60,000. Until their capital got up to an amount that would fairly represent their works it was not necessary for them to provide a depreciation-fund. He made those remarks because he was not only a shareholder, but an original shareholder. When the company was at its lowest ebb, and with scarcely a nostril above the water—the day they were turned out of Parliament, and the shareholders were selling at £4 or £5 a share—he doubled his shares at that moment. Another friend, who was not present that day (Mr. Daly), did the same. He thought it a pity that Mr. Usborne had made such a speech, because he believed it was very much calculated to injure their property. He wished it to be understood that they were in the same position as a great many companies all over the country, and from precisely and identically the same cause. They had all to raise the price of gas, and they had all to suffer from the high price of coal. There was no use in postponing the meeting for fourteen days, or even a day. No body of shareholders, no directors, no man could put before them a schedule —which was what their friend wanted—by which they were going to get a penny more than they had got this half year. The reason that they did not get it and could not get it was because they had not the capacity to earn it, in consequence of the high price of materials. It must be generally admitted that up to the present they had been very successful. The cause of their present want of success was simply the high price of coal. Could any director, manager, or other man avoid the price of coal? Was it not a little hard that any shareholder should exhibit so much temper, and propose a condemnatory resolution against a number of men who had carried them through so many hard fights successfully, simply because on this one occasion they happened to be unfortunate, every other company being unfortunate as well as they? Instead of having speeches made damaging to the interests of the shareholders, it would be just as well if they tried to be amicable to each other, sail smoothly with each other, and bear with each other. Let them not keep anything behind; but let them not make a division, because, if they made a division, they might depend upon it they would make a loss. There were plenty of men anxious to catch at any division that might arise in the company, and make capital out of it. There were plenty of engineers who would come across the Channel, and tell them all about their works at 10 guineas a day, and not tell them as much about it as they knew themselves. If the shareholders arranged their matters, they might be a good company; if they began to divide, then, and then only, would he begin to lose faith in them. Their capital now was not large. He challenged contradiction from any authority in the world upon this point. The history of gas companies was this: In large companies the capital was about four, four and a half, or five times the annual rental. In small concerns it was sometimes six or seven times the annual rental. It varied much, according to the size of the place, but those companies who had a quarter of their capital in their rental were said to be in a safe and good position. Now this company were in a better position than that. The chairman had told them that only about three and a half times their income was equal to their capital. Certainly, that was a good position to be in. On that account it was that they had not been writing off anything in the accounts for depreciation. He quite endorsed the statement that they should not be selling gas to the public at any lower price than it cost them. But it was very hard to hold their own with public bodies. They should not have one price for the corporation and another for private consumers. It was often said that it should be so, as the corporation were large consumers. But they only represented 1200 small consumers, and the only advantage in the case of the corporation was that there were no bad debts, and bad debts in gas companies ranged from 1½ to 2 per cent. But that was no advantage compared with having a service in a large shop with perhaps 50 or 100 lights. Mr. Usborne had asked why did they expect to do better in the next half year. That was only what every gas company expected to do. He had a number of gas companies in his own hands which had been doing very badly, because they had been all put out of their regular routine. There was nothing so necessary for the success of a gas company as that they should know what they were about, have the same materials, and have command over those materials. But in the course of last year companies had been obliged to go here, and there, and everywhere for coal, and to ask for it on their knees, in an attitude of supplication. Every coalmaster in Newcastle who had coal to sell had been almost torn to pieces by buyers. The London coal buyers had their clerks down in the North with their cheque-books in their pockets, and paying the coalowners for the coals before they were put on board at all. What was the consequence? Nobody had been able to get coals at anything like a reasonable price, or of the required quantity or quality. The coalowners, being alive to their own interests, sold off coals that they had had on the banks for the past 40 years—large heaps with the grass growing on them. Some of these coals had come to Cork, and more elsewhere. They could not get half the gas from that coal that they could obtain from the article newly dug and fresh from the pit. What was the result? A lower dividend. Were the shareholders going to be angry about that? Were they to fall out among themselves because coal was dear? However, the crisis was now past, and coal was more accessible; it was going down, and they could get the description of coal they wanted. That was one reason why he expected they would do better. The inferior coal he had alluded to produced very bad coke. Last week, however, the coke produced was a good deal in excess of the corresponding period last year, and this went far to pay the wages. A new apparatus that they had partly in action, and which would be wholly in action during the winter, constituted an improvement over 15 years ago that would clear them £1000 a year. That was another reason. Let the shareholders be hopeful, and not sell their shares. He, for one, did not intend to sell any; and if he saw them going below par he would buy. The company was conducted by directors than whom he never met a more honourable body of men—quick fellows, too, who understood things. If the meeting took his advice they would do as the drill sergeant said—"as you were"—and adopt the report. They ought to take their 6 per cent. They had the money to pay it, and pay it they ought, for this reason: Suppose that the price of coal should not keep going down, and they were not in the position they expected to be in by-and-by, they should then have to increase the price of gas. He would be the last person to propose what he did not believe was to their interest. It was to their interest to have a fair dividend. Let them have a fair dividend, but let them keep down the price of gas. If they went before the Board of Trade, the latter would tell them they had a large reserve-fund, and that they did not want assistance. He hoped that they would not have to go, but if they were reduced to that necessity then let them go, and secure their shareholders 5 per cent. He would impress upon them above all things to have no division, and to be hopeful. After all his time with them he had never made a statement, he had never given them an estimate, that events had not proved correct.

Mr. USBORNE maintained that what he had just said was correct. He had neither lost his temper nor endeavoured to introduce division among them. He merely asked the directors themselves to report upon the best means of introducing changes which he thought necessary.

Mr. MARTIN MAHONY said generally speaking Mr. Usborne's speech was an admirable one, but he should take exception to his statement respecting the depreciation-fund. He believed that their works were fairly worth what the company set them down at, and they were well able to pay the load they had on their back. He knew of several instances in which works were now worth a great deal more than they originally cost. Mr. Usborne must know that there had been periods of depression in the corn trade and the cotton trade. Why, all the great improvements that had ever been effected in manufactures had been the offspring of periods of terrible depression. Referring to the defalcations of the late accountant, he thought it was a very fortunate thing that they took place, because it made the company look more closely after their affairs. He would suggest that the leakage of their gas be tested. He could not help repeating that he did not think a depreciation-fund was at all necessary. If they believed that their works were worth more than they gave for them, on what principle could they depreciate. He thought some new blood might be infused into the directory.

Mr. SUGRUE said he listened with great pleasure to the observations made by Mr. Anderson, but he decidedly objected to the colouring he put upon the amendment now before the meeting. Mr. Anderson denounced it as an attempt to create dissension among them, and to lay them open to be the prey of any designing speculator who might come over to Cork. He (Mr. Sugrue) held that the amendment was the very reverse of that. It did not propose any interference with the directors, as was done in Dublin. They simply said to the directors, "You have not earned this dividend—you have not shown us (provided we take this money now) how you propose to be in a better condition next year. Go back, consider it for a fortnight, and lay before us some mode of conducting our business in a more economical manner." The amendment pointed clearly to that—to excessive payments in salaries, and to speculative improvements. He was sorry that they had not the advantage of Mr. Anderson addressing himself to that subject. At the last meeting he (Mr. Sugrue) requested that Mr. Anderson, or some competent authority, should report upon that valuable patent, that they were told they could not pay their dividend without. He thought the shareholders were entitled to that information. Mr. Usborne's amendment would, if adopted, prevent dissensions among them, and prevent a movement among the shareholders to appoint a committee of inquiry to investigate the acts of the directors.

Mr. M'MAHON said he fully concurred in what Mr. Usborne had said, and held that they ought to be carried ont.

The CHAIRMAN, in reply, said that on the recommendation of the directors the shareholders agreed to give Messrs. Lane and Still £1000 for the use of their patent and for any subsequent improvements in it. It had been said from time to time that the apparatus was no improvement at all, but he said it was, and that it was that apparatus that enabled them to pay their dividend. He held the same still, and would hold it as long as he believed anything to be true. They recently requested Mr. Anderson to test it, but the experimental apparatus they had on the works at the time was insufficient for the purpose. He was now in a position to state that Messrs. Lane and Still were so confident that they could convince any disinterested person as to the value of this patent, that they would have it tested again at the first opportunity on the entire works, and that if they were unable to satisfy any unprejudiced person as to the value and efficiency of the patent, they would pay back the money again. It could not be satisfactorily tested before the spring, in Mr. Anderson's opinion. The sum out of which they proposed to pay the dividend was the sum of debentures which they had invested in the Macroom and Passage Railways, and which they were not allowed by law to apply to the payment of their debts. That money could only be applied to the equalization of their dividend, or to meet some exceptional case. He thought this a legitimate occasion on which to so apply it. Their prospects were such as to warrant him in guaranteeing —if he might so speak—a dividend of 6 per cent. the next half year. But should they not be able to do so, and should it be deemed necessary, they had power to go to the Board of Trade, to ask for power to increase the price of gas. He then explained that the board had effected changes by which they took £100 off the salary of the secretary, and also of Mr. Still, and secured a distinct responsibility for the two officers at the works, but they could not do with any cheaper clerks, or a smaller number of clerks. Then as regarded a depreciation-fund, their works were worth considerably more than their capital. He asked Mr. Anderson if it was not a fact that they would bring to-morrow £160,000.

Mr. ANDERSON: More like £200,000.

The CHAIRMAN continued to say he had the utmost hope for the concern. He assured them that nothing would be gained by a postponement. The directors had already spent day after day for six weeks in thrashing the report, and inquiring into every item. If he thought there was the slightest use in it he would acquiesce in a postponement. He was willing to postpone the meeting if they wished. There was no reason for any one to depreciate the stock of this company. They were a local company, and people were not going to sell their shares to any speculator. He warned the shareholders not to part with their shares. He himself was not going to sell any share; he had bought a large number within the last few months, and another director had done the same.

In reply to Mr. Usborne, the CHAIRMAN said the assets in Collins's estate were £1300. The claims against the assets were larger than perhaps they would be in any other hands than their own, for they employed the best talent available in prosecuting the case against him. Their claims for the pursuit were now before the Court of Bankruptcy, which had already taken a favourable view of the matter, being inclined to look upon their claims as those of salvage creditors.

The amendment was negatived, and the motion agreed to.

After some discussion thereon, the retiring directors were re-elected, and the meeting closed with a vote of thanks to the chairman.

ALLIANCE AND DUBLIN CONSUMERS GAS COMPANY.

The Ordinary Half-Yearly Meeting of this Company was held at the Offices, Grafton Street, Dublin, on Tuesday, Sept. 30—Mr. JOSEPH BOYCE, in the absence of Mr. Moylan, in the chair.

The SECRETARY (Mr. Stevenson) read the notice convening the meeting, and the following report and statements of accounts were presented:—

In submitting to the proprietors the statement of accounts for the past half year, the directors very much regret that the adverse circumstances to which they adverted in their last report—namely, the increased cost, not alone of coal, but of every material connected with the make of gas—have continued to operate so injuriously as to render the payment of a dividend on the operations of the half year impossible. Under ordinary circumstances—that is to say, if the expenditure on coals, labour, taxation, iron, and fire goods, even approximated to the state of things as represented in the accounts of the corresponding period of last year—the net profits of the half year would have enabled the board to recommend the payment of a fair dividend to the shareholders. Unfortunately, however, a very different state of things prevails now. The increased cost of coal, as compared with the June account of last year, amounts to close on £20,000, while in almost every other item of expenditure there is a corresponding increase.

It may be satisfactory to the proprietors to know that the gas-rental continues steadily to increase; but the board regret to state that, although the secondary products—including sales of coke—are, nominally, more valuable than formerly, the real value thereof bears no proportion to the increased cost of coal, and for the reason that while cannel coal does not produce anything like the same quantity of coke as the ordinary coal, a much larger proportion of the make is required for carbonization, leaving, as a matter of course, a lesser quantity for sale. The proprietors are aware that the company is, unfortunately, in the catagory of those gas undertakings which are prohibited by their special Acts—no matter what may be the increased price of the new material—from increasing the price of the article in which they deal.

The London companies have the good fortune to be able to avail themselves of the provisions of an Act of Parliament which authorizes an increase of price proportioned to the increased cost of production. A similar provision was embodied in the Alliance Gas Bill of 1866, but that measure having been referred to Lord Redesdale as an unopposed bill, the noble lord, in the exercise of the extraordinary powers vested in the Chairman of Committees, saw fit to strike out the clause, thus compelling the company to supply gas, under all circumstances, at a fixed price, although coal and every other material connected with gas-making might be, as at present, double the price at which they were to be obtained at the passing of the Act. The limitation of price in the case of this company amounts in effect to a repeal of the Gas-Works Clauses Act, which authorized a maximum dividend of 10 per cent. upon all the original capital embarked in gas undertakings, and its hardship and injustice as regards this company are strikingly exemplified in the fact, that while this company cannot increase the price, some of the London companies, under the provisions of the Metropolis Gas Act, have already increased the price to such an amount as will enable them to pay and maintain their maximum dividends.

Under these circumstances the directors felt that they owed it to the shareholders to avail themselves of every means and opportunity of remedying such an anomalous state of things, and they have accordingly taken advantage of an Act passed in the late session of Parliament, at the instance of the Board of Trade, for the express purpose of affording some relief to the companies situated in regard to price, as this company unfortunately is. The bill, as originally prepared, would have been a substantial advantage to all gas companies; and although an attempt was made by influential parties, both in the Lords and Commons, to limit the increase of price to such an amount as would prevent the companies paying a larger dividend than 2 per cent. on their investments, the Board of Trade ultimately succeeded in defeating the proposition.

The directors, looking to the interests of the shareholders, and regarding themselves as the trustees of the board, to be elected on the 30th instant, have applied to the Board of Trade for a Provisional Order—under the Act referred to—to reduce the illuminating power in preference to an increase of price. They have made all necessary preparations for the sustainment of their application, which is in itself so reasonable and so fair that, although threatened with opposition from some of the local authorities and private individuals, they entertain a well-grounded conviction that it must be successful, in which case the proprietors will be secured a dividend not exceeding 5 per cent. per annum.

Several of the English and Scotch companies—some of them located in the very districts from which this company obtains its supplies—are preparing to avail themselves of the provisions of the Amendment Act. It must, however, be apparent, not alone to the proprietors but to the public, that the Act of last session is at best but a temporary expedient to prevent positive loss to the gas companies; and that if coal continues to maintain its present price for another year, the Legislature must interpose between the producer and the consumer, and enable the former to obtain a profit somewhat proportioned to the risk and extent of capital embarked in such undertakings.

Exception having been taken at the last general meeting to the sufficiency of the audit of the company's accounts, the board have considered it advisable—and the more especially as they have already intimated their intention of placing their office at the disposal of the proprietors—to submit the accounts to a professional accountant, and having secured the services of Mr. Charles Cummins, that gentleman has made a careful inquiry into the working of the company, terminating with the close of the June half year, and the result of his audit is embodied in the certificate appended to the accounts now submitted to the shareholders.

In accordance with the intimation made to the shareholders at the meeting held on the 18th ultimo, your present directors tender their resignation, holding office only until their successors have been appointed; and it will be the duty of the proprietors, at the special general meeting, to be held on the 30th, to elect eight directors to conduct the affairs of the company.

Dr. *Revenue Account, for Half Year ending June 30, 1873.* *Cr.*

Manufacture of gas—				Sale of gas—		
Coals, including dues, carriage, unloading, and all expenses of depositing same on works	£66,982	1	11	Gas (250,049,400 cubic feet), at 5s. 6d. per 1000 cubic ft.	£68,464	6 11
Purifying matrls., oil, water, and sundries at works	391	5	7	Gas (23,894,000 cubic feet), at 4s. 6d. per 1000 feet	5,411	0 4
Salaries of engineers, including chief engineer, superintendents, and officers at works	1,250	15	7	Public lighting and under contracts	4,830	19 5
Wages & gratuities at works	8,054	2	4	Rental of meters	2,326	2 0
Repairs and maintenance of works and plant (including renewal of retorts), machines, apparatus, tools, materials, and labour	4,474	9	9	Residual products—		
	£81,152	15	2	Coke, less labour and cartage	13,236	11 8
Less old material sold	134	14	5	Breeze	1,775	0 11
	£81,018	0	9	Tar	1,584	12 2
Distribution of gas—				Ammoniacal liquor	1,795	0 5
Salaries of surveyor, chief inspector, inspectors, assistant inspectors, and clerks in light office	1,018	11	6	Rents	85	9 0
Repair, maintenance and renewal of mains and of service-pipes, including materials, laying and paving, and labour	1,559	17	6	Transfer fees	88	12 6
Repairing, renewing, and refixing meters	1,436	13	10			
Public lamps—						
Lighting and repairing	825	16	6			
Rents, rates, & taxes—						
Rents	691	5	1			
Rates and taxes	3,206	4	10			
Management—						
Directors allowances	400	0	0			
Salaries of secretary, accountant, and clerks, office-keepers, and messengers	1,015	0	10			
Collectors commissions	1,594	13	7			
Stationery and printing	299	6	10			
Genl. establishment charges and incidentals	814	6	10			
Company's auditors	15	0	0			
Law charges	280	1	2			
Bad debts and allowances	1,021	14	11			
Balance, carried to Profit and Loss Account	4,401	1	2			
	£99,597	15	4		£99,597	15 4

Profit and Loss Account, Net Revenue for Half Year ending June 30, 1873.

Interest to bank, and on bills, &c.	£643	19	9	Balance of net profit brought from last accnt. (Dec. 31, 1872)	£9,743	12 4
Ditto bonds	3,318	5	8	Amount drawn from contingent account	4,378	17 8
Balance of net profit to be carried to next account	438	15	9		14,122	10 0
				Less dividend paid for the half year ended Dec. 31, 1872	14,122	10 0
				Balance brought from Revenue Account being profit for the year to June 30, 1873	4,401	1 2
	£4,401	1	2		£4,401	1 2

The CHAIRMAN said it was with much regret he found himself unexpectedly called upon to-day to move the adoption of a report in which, for the first time in the history of the company, the directors were unable to recommend the payment of a dividend, as for the last 30 years a dividend had been paid at the rate of 7 per cent. The combination of circumstances that had led to this unfortunate result, and over which the directorate had had no control, had been felt by every gas company. They were fully set out in the report; and under the peculiar circumstances of the meeting he thought it unnecessary to discuss them further. He would, therefore, satisfy himself by moving—"That the report and statement of accounts now read be received and adopted."

Sir JOHN GRAY, M.P., seconded the resolution. He could not say that he did so with pleasure. On the contrary, it was with considerable pain; for he had sincere sympathy with the shareholders, many of whom he knew to be industrious and hard-working persons who had put their savings into this, which they considered to be a solvent and substantial bank, to yield them annual dividends. During 25 or 26 years, as stated by the chairman, they had been enabled to pay dividends varying between 8½ and 6 per cent., averaging on the whole 7 per cent. Any person looking at the accounts would see on the face of them that if coals had been at the same rate last half year as for previous terms, they would be at present able to recommend a dividend of 7½ per cent. as heretofore. Unfortunately, though, coals had risen, and every one had felt the increase. Even in Newcastle, the great centre of a coal-producing district, the price had risen from 6s. to 20s. per ton, an advance of 300 per cent. As a consequence, the Newcastle Gas Company, supplying a population of 150,000, foreseeing this extraordinary rise in the price of coal, applied to Parliament for powers to raise the cost of gas to 5s. 6d. per 1000 cubic feet. Cork had similarly suffered.

Mr. DRIMMIE: From bad management.

Sir JOHN GRAY: No doubt from bad management; and he did not say that the management of this company had been as perfect as it might have been, but it had been as honest and straightforward as it was possible for management to be. He would not enter into any discussion as to the gentlemen who constituted the directorate, and who had had for many years the confidence of the shareholders. If the price of coal had been the same they would give the usual dividend. Allegations having been made with reference to the management of the works, they appointed an engineer (Mr. Church) who had been engaged as a witness before the committee of the House of Commons to show that it was bad, and they placed everything at his disposal for his investigation that he might give a complete and impartial report. That gentleman said that the retorts were not well set, but it was right to say that they were set under the direction of one of the most eminent engineers in London. The same might be said regarding the engine used for charging the machines. It was not put up by their present engineer, but under the advice of the late Mr. Barlow. In short, the directors took the best advice they could obtain, and the only compensation in their power, when they found they had not succeeded, was to tender their resignation.

Mr. DRIMMIE: Before the motion for the adoption of the report is put to the meeting, I should like, for a few moments, to refer to certain items in the accounts which do not appear to me to be satisfactory. We are met to-day under very painful circumstances indeed. We have been called together to receive a most unsatisfactory report of the half year's working of what ought to be one of the most prosperous gas companies in the kingdom; and though personally I feel most reluctant to come forward again to complain of the management of our concern and the report now presented, yet I am compelled by a strong sense of duty to my unfortunate fellow-shareholders to do so; and if you will bear with me for a few moments, I think I shall be able to show you that my objections to the report and accounts are neither frivolous nor superficial, but most reasonable and well founded. I object to the report—first, because it is exceedingly unsatisfactory, and does not present the profitable result which would have been achieved under ordinary, careful, and skilful management; secondly, because the accounts, though bearing the signature of the vice-chairman, the secretary, and accountant, and vouched by two auditors of the company, and by a public accountant, are incorrect; thirdly, because the charge for collectors commission is almost 100 per cent. greater than in the previous half year, and there is no explanation whatever given thereof; fourthly, because of a sum of £6496 having been charged to the contingent account for alleged bad debts and deficiencies, and without sufficient explanation, in addition to a further sum of £1021 14s. 11d. charged to revenue accounts for much the same thing; fifthly, because the deficiency of 468 tons of coal at No. 3 and 4 stations has not been accounted for in any form whatever; sixthly, on account of the item of £1364 12s. 6d. for parliamentary costs charged to capital account. With regard to the first of these objections, I think you will all agree with me that a more unsatisfactory report was never submitted by a board of directors of a company such as this is to an unfortunate body of shareholders. It is a deplorable thing when we come to look into it and see a splendid company like this brought to such an unfortunate position by downright ruinous working—the consequence of incompetent and unskilful management. I venture to say that there is no one present who entertains a greater respect for the gentlemen who assumed the responsibility of the administration of the affairs of this company than I do, but I must say that their management of our concern has been most faulty and disastrously unsuccessful. It is quite unnecessary for me to occupy your time by wading through a mass of figures to prove that what I say is correct; because I am sure that not one of you can doubt it, as it is palpable to every man of ordinary intelligence who will take the trouble to examine the matter for himself. But of such of you who have not examined into it, I may mention, as the result of my examination, that if the management was what it ought to have been, instead of meeting here to-day to listen to this miserable report, we should have met to congratulate ourselves on a handsome dividend, derived, if not altogether from the profits of the past half year, at all events from a substantial reserve, created by the surplus profits of previous years. Had the management been what it ought to have been, the surplus profits derived during the past six and a half years would have enabled the directors to lay up a respectable reserve-fund to meet such unforeseen misfortunes as the increase in the price of materials, of which the directors so much complain, and behind which they excuse themselves for not being able to declare a dividend. Now, as regards my second objection, the accounts are vouched by the two auditors of the company and by a public accountant; yet in the revenue account I find that the proceeds of the gas said to have been sold have not been fully accounted for, as the sum set down for it is £264 7s. 5d. less than it should be, according to the account itself. The account says that 250,049,400 cubic feet of gas were sold at 5s. 6d. per 1000 cubic feet, which would amount to £68,763 11s. 8d.; but the amount returned is only £68,464 6s. 11d., or £299 4s. 9d. less than what it ought to be. Again, the account shows that 23,794,000 cubic feet of gas at 4s. 6d. per 1000 cubic feet produced £5411 0s. 4d., while it should be £5376 3s. Now, the balance of these arrears make it appear that the proceeds of the sale of gas during the half year was £264 7s. 5d. more than has been accounted for to us; and I ask you, gentlemen, can we submit to the adoption of such an account as this without a satisfactory explanation? What is the meaning of furnishing such an account as this; and what explanation have the directors, and secretary, and accountant, and auditors to offer us for this state of things? Do they think it is sufficient to put an array of figures on paper and send them to the shareholders, and expect them to be satisfied? I don't know what explanation they can give; but no matter what it may be, I say that to issue an account containing such flagrant errors is utterly inexcusable. My next objection is to the item for collectors commission. I find that for the past half year it amounts to £1594 13s. 7d., on a rental of £99,597 15s. 4d.; and that for the previous half year it was only £800 17s. 6d., on a rental of £101,208 5s. 10d. The increase is nearly 100 per cent., and demands explanation. I don't object to the collectors being paid, and sufficiently paid, for their services; but this enormously increased charge requires explanation, and I hope that a satisfactory explanation will be given to us to-day. My next objection is that, in addition to the sum of £1021 14s. 11d. debited to revenue account for bad debts and allowances, there is a sum of £6496 17s 1d. charged to contingent account for bad debts and diminution in stocks. This is in the highest degree unsatisfactory, and, seeing that we are getting no dividend and making no profit, I think that a full explanation of the cause of taking this large sum off the revenue-fund is due to us. What are the bad debts, and what efforts have been made to recover them? And how are the deficiencies in the coals accounted for, if proper supervision is exercised? I object to this item, and think that, in the interests of the company, it might be struck out of the account; that a thorough and searching investigation should be made into these bad debts, and steps taken to recover them. The debtors who have had accounts wiped off in this very convenient way are well able to pay, and I see no reason why they should not be compelled to do so. Under ordinary circumstances, and if the company were in a flourishing condition, we might take it for granted that the directors had exhausted every means of recovering these debts before writing them off as bad and irrecoverable, and I would not occupy your time in drawing attention to them; but, under the present unsatisfactory position of the company, we must not stand by and allow a single penny of our money to be lost or wasted. Therefore I must insist on having these so-called bad debts thoroughly investigated and examined into, and effective measures taken to recover them. I am pledged to some of our shareholders—poor, struggling men, who have all their little savings invested in this undertaking, and to helpless widows and orphans, who are, in a great measure, dependent on the dividends from this company for their subsistence—to look after these items, and to denounce the past management of the company as having been the means of depriving them of their legitimate dividend and reducing the market value of the shares to a very serious extent. It is bad enough to have permitted the company's money to have been lavishly expended for years past in experiments, embellishments, and unprofitable works, but we must not now make matters worse by abandoning over £7000 of debts due to the company, while among our 1500 shareholders there are so many poor ones bewailing the misfortunes which the unsuccessful management of the company has entailed on them. As regards the coal deficiencies which have been wiped off in this enormous charge against our reserve-fund, I think we are entitled to an explanation as to how they arose, and should insist on such measures being taken as will effectually prevent a recurrence of such deficiencies in future. My fifth objection to the account is, that there appears a further deficiency in coal during the past half year at No. 3 and 4 stations, amounting to 468 tons, and I think that this should be satisfactorily explained before we pass the account. The directors attach great weight to the cost of coal as an excuse for not paying a dividend; but they make no attempt to explain where those 468 tons of coal, representing (at 27s. 9d. per ton, the average price during the past half year) no less than £674 5s. 4d. of the shareholders money vanished too; and I would like to know how they are going to account for such a loss. Next, as regards the £1364 12s. 6d. parliamentary costs charged to capital, I understand these are part of the costs incurred by the abortive Corporation Gas Bill of last session, and I was under the impression that they should be paid by the corporation and not by the gas company. We did not invite the corporation to purchase our property; they in a manner forced us to consent to a sale; and, as their bill became a failure through no fault of ours, we are surely entitled to the costs we were put to. This is a subject demanding earnest consideration, for, curiously enough, the corporation are meeting this very day to promote a new bill for the purchase of the company, and, if we do not take good care, we may be let in to pay another £2000 in a similar operation. We are entitled to know from the directors what efforts, if any, have been made to recover this amount from the Corporation of Dublin. It is a great misfortune we did not look more sharply after our account before now, as, had we done so, we might have had a more satisfactory state of things before us to-day. You will observe in the present account that our income last year amounted to £99,597 15s. 4d., while our expenditure was £103,429 0s. 4d., or, in other words, for every £100 we earned we spent £103 16s. This is exceedingly unsatisfactory. But, gentlemen, I find that this expenditure has been going on ever since the companies amalgamated. During the past six years and a half our receipts amounted to £1,065,901 6s. 4d., and our expenditure to £1,080,565 5s. 9d., showing that in order to earn £100 we have had a continuous expenditure of £101 7s. 6d. This enormous expenditure has brought us no profitable results, and only equals the incompetent practical working of the concern itself in the imprudence of such an outlay, which must astound every person having practical experience of the management of gas companies. I am sorry for having detained you so long, but I thought it right to bring before you the points I have referred to. I have only now to repeat what I have more than once told you as my opinion, that the company should be one of the most prosperous in the kingdom, under competent management. I hold that opinion still, and I object to this report and account passing till the points I have drawn attention to are explained.

The CHAIRMAN said there was nothing at all unreasonable in the observations made by Mr. Drimmie; but on the 18th ult. a committee was appointed to take all matters respecting the management of the company into consideration. In pursuance of that arrangement, Mr. Drimmie himself made two applications to the secretary to know when it would be convenient for the directorate to attend at an investigation of the accounts, and Mr. Stevenson replied that the directorate and officers would be glad of the opportunity to afford assistance. However, there had been no meeting held since. It was obvious that the explanations now sought by Mr. Drimmie ought to have been obtained by the committee. Mr. Drimmie could attain his object by moving the continuance of the committee, and it would not be resisted. Then they could adjourn for the report of the committee.

Mr. DRIMMIE: We have not the slightest intention of adjourning; therefore I studiously avoided putting forward a resolution for the rejection of the accounts. But it is due to the shareholders present to explain why the gas had not been fully accounted for.

Mr. FOTTRELL said that no doubt Mr. Drimmie's calculations were correct; but abatements and allowances existing at the amalgamation had since been continued. Allowances of 10 per cent. were made to certain houses continuing the contracts from the amalgamation. As regarded the collectors, Mr. Drimmie was under a mistake in comparing this half year with the last, instead of with the corresponding period of last year.

Mr. DRIMMIE said the collectors commission last half year was only £800; this half year it was 100 per cent. more.

Mr. FOTTRELL, referring to the alleged excessive expense of working the company, said on analysis he found the expense was 11s. 7d. per ton, which would bear favourable comparison with the cost of working similar undertakings. He did not think there was any blame to be attached to the directors for the management of the concern. As to the deficiency of coals, the truth was that on one occasion the coals were of an inferior quality, and the director of the works, not wishing to show a small return from the coals, used a little more. With regard to the £600, an explanation had already been given in a letter to Mr. Drimmie, who had very properly asked for it. A large number of unsettled accounts came into their hands at the amalgamation with the Hibernian Com-

pany, where if a balance was due by a man he would say he would not pay it—that his custom was sufficient consideration.

Sir JOHN GRAY said the collectors were not paid salaries, but per centages. The sum put down paid as per centage in this account was not the commission on the quarter ending in June last, but upon the winter quarter, because the accounts were not collected until the ensuing quarter after they became due. Thus, though there was more gas consumed in winter, the summer quarter yielded more commission, the product of the winter quarter being then collected.

Mr. MACREADY said there was an honourable understanding arrived at that until the day the directorate tendered their resignation, the committee would not give them any unnecessary trouble nor investigate the accounts, as they did not wish any angry discussions. Hence the committee did not act unfairly in not examining the accounts. Meanwhile Mr. Fottrell had admitted the cause of the deficiency of the coal. That admission ought to have been made in the report, and thereby prevent any shareholder eliciting it now. Again, Mr. Fottrell stated that the cost of the working of the concern would bear favourable comparison with the expense of the management of other gas companies. That was not the point. Mr. Drimmie objected to the expenditure as continuously being a little over the return—that the expenditure was so large it exceeded the rental. But they had the sworn testimony of engineers given before the committee of the House of Commons, and, in addition, Sir John Gray himself acknowledged that the management was bad.

Mr. FOTTRELL: According to inquiry, it was owing to the defective carbonization, and not the expenses.

Mr. MACREADY: There was an immense amount of leakage besides. We determined not to bring you together, and raise opposition to the accounts passing, but the committee thought the cause of the loss ought to have been stated in the report.

Mr. COFFEY remarked that the proper course for the meeting to pursue was not to pass either the accounts or the report. He impugned the accounts, and he was sure that any business man, or man of sense, could not approve of the report. But there was a course open which would carry out the purpose of the company and of the directors. The shareholders were unanimously resolved on electing a new board, in whom they would have confidence, to manage their affairs, and he would propose that a resolution be now passed refusing to accept the report, and referring the same to the new board to take into consideration, with a view to the future good management of the company. In the meantime, let all agitation before the public cease, and by-and-by the position of the company would be improved, and it would be raised to what it ought to be, one of the first commercial enterprises in Ireland.

Mr. S. WATERHOUSE thought that a refusal to pass the accounts would be tantamount to a vote of censure upon the committee who had investigated them. As shareholders, they had been very remiss in not looking after their property sooner; but so long as they were getting 7½ per cent. they were contented. Now, however, when things had turned, they were all ready enough to blame those who had been managing their affairs. It was not fair to throw all the blame on the directors, considering that they were themselves somewhat at fault.

Mr. MACREADY said no amount of putting back the accounts would make good the deficiencies. The committee had thought this matter over very carefully, and they had come to the conclusion that it would be better to pass the report, and let the new board make those who were able, pay their accounts. He asked Mr. Coffey not to press his resolution.

Mr. COFFEY said his real object was to do what he considered best for the interests of the company: but if the meeting thought it better to adopt the report and statement of accounts, he would not object.

Mr. P. CREAGH said if the accounts were passed, it would not be competent for the new board to go into an investigation of the accuracy of the figures in the schedule. It would be, no doubt, competent for the directors to sue any debtors whom they might think able to pay the demands against them; but beyond that, he thought the adoption of the report would preclude any further inquiry as to the loss of the 400 and odd tons of coals, and the other matters mentioned in the report. It certainly was a very sad state of things, with gas for the last half year selling at 5s. 6d. per 1000 cubic feet, that there should be only £400 odd to the credit of the work on the outlay. What would it be in the year 1874? because, on July 1, 1874, the charge for gas would be reduced by 2d.—that is, the prices would then be but 5s. 4d., and it would continue so till 1887, when it would be still further reduced to 5s. per 1000 cubic feet. Now, if on the past half year's working they were only able to show a paltry profit of £400 while the price was 5s. 6d., what would the profit be likely to be when the charge was 5s. per 1000 feet? The loss would then be about £15,000. Still he considered there would be no good result from a rejection of the report, and on that ground it might be advisable to adopt it. He regretted the Board of Trade, in their wisdom, did not allow the directors to make a reasonable increase in the price of gas, so that the shareholders would have some chance of a dividend.

Mr. MACREADY said the Board of Trade did not refuse to allow an increase, but they said they would not enter into communication with the present board, who were about retiring. When the new board, however, was elected, they gave an intimation that they would be ready to communicate with them.

Mr. KENNEDY called attention to the contingent-fund, and asked for an explanation as to how £6000 were taken from that fund. He was informed that £4000 of that sum was carried over for a number of years as bad debts; but these ought to have been wiped off at the end of every half year, as the Act of Parliament rendered it compulsory on the directors each half year to strike off bad debts. But, if his information was right, the directors had been carrying this sum over every half year from the time the Hibernian Gas Company was amalgamated with theirs. If the meeting adopted the report they would be giving the directors a discharge for £6000, and they never could look after it afterwards.

After some further conversation, the adoption of the report was put and carried.

Mr. DRIMMIE then gave notice that he would move at the next meeting—first, that in future one of the auditors of the company shall be a professional gas auditor; secondly, that in future the revenue accounts of the company shall state the quantity in cubic feet of gas sold for public lighting and under contracts; thirdly, that the directors will henceforth issue with the report and statement of accounts in March each year a printed list of the names and addresses of the proprietors of the company as they appear on the registry on the 31st day of December preceding; fourthly, that the future half-yearly reports to be issued by the directors shall be accompanied with a report from the engineer of the company detailing the condition of the works in Dublin, Kingstown, and Bray respectively, and the improvements effected during the preceding half year—the quantity of gas registered per station-meter, the quantity obtained per ton of coal carbonized, the total quantity of gas unaccounted for during the half year's making, and the rate per cent. of loss in the make—these particulars to be given respecting each of the three works separately.

On the motion of Mr. TILLIE, High Sheriff of Londonderry, it was resolved that the shareholders committee be reimbursed for the expenses they were put to during the investigation, that their account for £112 9s. 8d. be paid, and that the marked thanks of the shareholders were due to them for the ability with which they discharged the duties they had undertaken.

Mr. DRIMMIE announced that the subscriptions received from shareholders would be returned.

A vote of thanks having been given to the chairman, the meeting was made special, and Mr. MACREADY was called upon to preside.

On the motion of Mr. D'ARCY, the following gentlemen were unanimously elected to constitute the new board of directors:—Sir John Gray, M.P.; David Drummond, J.P.; Edward Fottrell, J.P.; John Richardson Wigham; Thomas Synnott; Maurice Brooks, J.P. (Lord Mayor Elect); Michael Murphy; and William M'Naught.

Mr. BROOKS, having been called to the chair, expressed the pleasure it gave him to preside over the first meeting of the new board, and hoped that in future their business would be conducted in a much more satisfactory manner.

Mr. MACREADY then proposed that the salary of the secretary, Mr. Stevenson, be reduced. The committee considered it excessive, particularly when they compared it with the salaries of other persons in larger companies than theirs. Besides, the company's circumstances would not permit it. The committee had named the sum the salary has to be fixed at; but they thought it best to leave it entirely in the hands of the new board to settle the exact amount they would give.

Mr. DRIMMIE said that it was the intention of the committee that the salary they intended to give Mr. Stevenson should be turned by-and-by into a pension.

Mr. KENNEDY pointed put that under the new Act of Parliament the salary should be fixed by the meeting.

Mr. MACREADY said that they had fixed the sum at £300. Others wished it to be £500. The two sums were before the meeting now, and it would be for them to fix the salary.

On the motion of Mr. D'ARCY, it was resolved, after some discussion, to fix the salary at £500, the amount of superannuation to be left discretionary with the board.

Mr. KIERNAN then proposed—"That all contracts for coals and other supplies required by the company (after the termination of existing contracts) shall be publicly advertised for, with directions that the tenders for such contracts shall be sent in sealed covers, which shall be opened at a board meeting only; and that such tenders shall be accepted or rejected by the directors, but only when assembled as a board."

Sir JOHN GRAY pointed out that such a resolution would tie the hands of the board, and suggested some alteration in the wording by which the directors would be at liberty to buy in the markets when necessary.

Mr. DRUMMOND said if the resolution were not altered, he would resign his seat on the board.

After a good deal of discussion, it was resolved to add to the resolution "that this rule should be carried out when practicable."

The resolution was then adopted.

Mr. DRIMMIE said the next point they had to consider was how they were to remedy the serious defects which exist in the carbonizing and distributing departments of the company's works. This he considered to be at the root of all their evils, and with the view of remedying it he proposed—"That the directors shall immediately adopt such measures as to them shall seem most desirable to remedy all the company's works and plant, and place the same in a proper state of efficiency." He had visited the company's works, and he said without fear of contradiction that notwithstanding the directors frequent reports as to the magnificence of the works, they were not in the state of efficiency which was necessary for the prosperity of the company. The Dublin works were certainly distinguished for their embellishment in the way of experimental machinery, the arrangement in that way being, perhaps, the most extensive he ever beheld in a gas-work. But mere embellishments were not the things wanted. The more important departments, the carbonizing and distributing apparatus, were in a deplorable state of inefficiency, and instead of being, as they ought to be, the main sources of profit to the company, they were at the root of the enormous loss which the company were still sustaining. He thought it would be well in the first place to dispense with steam stoking if it had not already been abandoned, and to have the retort-settings altered to suit manual labour. In reference to the unaccounted-for gas, he believed it was mainly owing to defective service-pipes and meters, and therefore it was absolutely necessary that the whole of these should be overhauled, and the deficiencies made good. Some minor matters, such as condensers, scrubbers, and purifiers, also demanded attention, but the directors would, of course, have the advice of skilful and competent engineers on these points, and these defects would be easily remedied. He felt quite sure that the new board would apply the improvements pointed out, and would take such other measures as would occur to their superior judgment to place the company in a flourishing condition. It would take money to effect these improvements, but the money would be well spent, and be the means of earning a good dividend, and at the same time an honest one, from profits realized. Let the shareholders now, by passing the resolution proposed, begin at once to put their works in order. When they had passed the resolution they would have done their part; and he thought from the high character and business capabilities of the gentlemen just put on the board he could take upon himself to promise they would do their part in a manner which would earn for them the grateful thanks of every shareholder in the company, and deserve praise from the citizens of Dublin. He hoped that one of their first acts would be to put an effectual stop to the pernicious system of allowing officers and other persons to burn gas without meter, and free of cost—a system which had been going on for years, and through which the company had sustained a loss to which he could not make an approximation. He would also suggest to the directors whether it would not be in the interest of the company to dispose of the valuable premises in which they were then met, and for which they ought to get a large sum that would be of more service than the retaining of them. The business of the company could be carried on at the works, the proper place for it; and an inquiry office in the city would be quite sufficient to prevent any inconvenience to the public from the change. His faith in the concern was unshaken by its misfortunes. The property of the company was a splendid one if well handled, and as he firmly believed that they had placed it in the hands of gentlemen who would manage it with ability, prudence, watchfulness, and economy, and who would take vigorous and effective measures to improve it, he was sanguine that at no distant day it would take its stand amongst the most prosperous gas companies in the kingdom.

Mr. BOWEN seconded the motion, which was put and carried.

A vote of thanks was given to the chairman, and the proceedings terminated.

CORPORATION OF DUBLIN.

RENEWED PROPOSITON TO PURCHASE THE ALLIANCE GAS-WORKS.

A Special Meeting of the Corporation was held on Tuesday, Sept. 30—the LORD MAYOR presiding—to consider the propriety of applying to Parliament for an Act to enable the corporation to purchase by compulsion or agreement the property of the Alliance Gas Consumers Company.

Mr. NORWOOD moved the following resolution:—"That this council do hereby at this meeting, of which special notice has been given, authorize and direct application to be made to Parliament in the ensuing session, on behalf of the Corporation of Dublin, for an Act to enable them to purchase by compulsion or agreement the undertaking, works, and property of the Alliance and Dublin Consumers Gas Company, in the alternative for power to acquire lands by compulsion or agreement, and to raise money to erect new gas-works, and to manufacture, sell, and supply gas in the city of Dublin, and for all other necessary powers to carry out the said purposes. And that the law agent be hereby directed to take all necessary steps to proceed with such application to

Parliament under direction of a committee, to be called the Gas Committee, hereinafter named—viz., the Lord Mayor, C. Dennehy, Alderman Redmond, Alderman O'Rorke, Alderman Tarpey, Councillor Murphy, Councillor Meagher, Councillor Callow, Alderman M'Swiney, Alderman Durdin, Councillor Byrne, Alderman Purdon, Alderman Manning, Alderman Gregg, Councillors M'Cormick, Franklin, Dockrell, Bolger, and G. P. Warren, and that such committee shall have all necessary powers to carry such proceedings into effect, subject to the bye-laws which govern the general committee of the council; and that the town-clerk do take all necessary steps to carry out this resolution, pursuant to the provisions of the Act 10 and 11 Vic., cap. 34." In support of this proposition he said his task was light, because the principle he intended to submit had been affirmed in a full house of 36 members on the 27th of October last, and had been affirmed in upwards of 140 cases in England, where the lighting of the towns had been placed in the hands of the representatives of the citizens of the municipality. One argument against the purchase was untenable and derogatory to the dignity of the corporation—namely, that there were not men of sufficient capacity in that body to manage the gas affairs of the city. When he saw what the corporation had effected, and the great results accomplished by small means, he could not doubt they had many men of the ability and capacity to carry out these works. In every case in which the municipalities of towns had taken in hands the management of the gas affairs, it had been carried out satisfactorily, to the advantage of the citizens, to the ease of the rates, and to the improvement of the illuminating power and a reduction in the price of gas. There were only two alternatives to solve the matter. One was that the corporation should erect new gas-works, which would entail enormous expense, and was a scheme he would not advise them to undertake. The other was that a new company should be started to get rid of the monopoly which the present company enjoyed. But when that had previously been tried it failed, and he had now in his hand a bill passed in 1866 amalgamating the Alliance Consumers, Commercial, and United General Gas Companies, and thus getting rid of the competition which, such as it was, would have benefited the city. On April 6, 1866, a contract was entered into with the present amalgamated company to light the lamps of the city for ten years at a certain fixed rate. They were just approaching the conclusion of that contract, and if the corporation refused to take action now and to adopt the resolution which they affirmed last year, and which he asked them to affirm under much better auspices this year, and if they allowed that contract to expire on March 6, 1876, within 2½ years from the present period, they would leave the consumers of gas within the city and in the surrounding districts completely at the mercy of this monopolizing company. That contract was entered into after great deliberation, and was a fair one on the part of the company and of the corporation under the management of No. 1 committee, and it had worked well up to the present time; but after that contract had been working for several years, it was re-affirmed by Parliament in 1871, and it was stated to be a binding contract. The Act was altered for the purpose of increasing the illuminating power and slightly increasing the price. The corporation promoted a bill in the last session of Parliament, and Parliament in its wisdom thought that the bill ought not to pass. He was not going into the details of that measure or to discuss the position of the gas company, or the details of the proposed measure, which he trusted the corporation would introduce at the next session of Parliament. All he would do to-day was to act as was best—as was right and proper in the interests of the corporation and of the citizens, as the gas consumers. If they decided on going on with the preliminaries of the bill, there would be another meeting held that day month to consider whether they would go on or abandon this position.

Alderman REDMOND, in seconding the resolution, did not bind himself to it further than as regarded preliminaries. He thought the corporation should be in a position to buy or not as they pleased. He did not wish to go into the figures or prices; but it would be well to get power to have the value fixed by independent parties.

Mr. DENNEHY opposed the motion. He did not think they ought to commence with this bill unless they intended to go on, especially where so great interests of the citizens were involved. It held out to the citizens before that they were getting a splendid bargain in the gas-works, and what was the result? They were about binding the citizens to pay the gas company 30 or 40 per cent. more than the market value of their concern. The press had advocated the taking over of the gas-works by the corporation; but he would say, with the greatest respect for the press, that the managers of the journals should have examined and seen whether the allegations of the company were facts or not before they supported the project. He argued strongly against taking up this matter in a hurry. He believed that the powers of the corporation should be increased. He pointed out that if the gas-works had been purchased this year, there would have been an increased taxation of the citizens before the end of the year. They should, therefore, be very cautious what they did in the matter before them. He concluded by moving the following amendment:—"That, inasmuch as it is now universally admitted that the offer made by the corporation early this year for the purchase of the Alliance Gas Company's works was from 30 to 40 per cent. in excess of the market value of the same, and as such mistake originated through the corporation not having in the first instance properly investigated the state of the company's works in all their details, and as well as not having examined into what had been really the results of the company's trading some previous years, particularly for the last two, they now, in order to avoid a like mistake on the part of the corporation, determine that no action whatever be taken till the results of the working of the company under the new management, for at least 12 months, be made known to the citizens."

Mr. DOCKRELL seconded the amendment. He said there was a feeling of distrust of the corporation among the citizens with regard to the corporation purchasing the gas-works. It would involve a necessity to seek for powers to borrow money to the extent of £42,000. They were now asked to insert advertisements in the newspapers at a cost of at least £500 to this corporation. Were they in a condition to expend such a sum of money out of their funds? It was unjust and unfair towards those men under whom the concern was about to start. The affairs of the company were about to be placed under the management of new directors, and if they were disturbed they would not be able to fulfil their contract with the corporation. It would be time enough on the expiration of that contract to take the steps now proposed. He warned each gentleman present, as he had done before, that they would have to put their hands in their pockets to pay expenses if they did not first obtain the sanction of the citizens of Dublin.

The Hon. Mr. VEREKER said they were disposing of the matter in a house with the existence of a quorum trembling in the balance. When that was all that the whip employed for the occasion had been able to do, it showed how small an interest the citizens took in the matter. Having reference to the rise in the price of coal, this project would be especially hazardous in relation to Dublin. That very day there was a meeting of the gas company. The corporation had not yet had an opportunity of knowing what was taking place at it; yet they were asked to act in this matter. How would that be regarded by a committee of the House of Lords? He had not sided with the gentlemen who had from time to time pronounced the old directors of the gas company to be in fault. They might or they might not have been prudent, cautious, and enterprising; but no one would pronounce a censure on them without having first had an opportunity of contrasting their proceedings with those of their successors. Last year the witnesses brought forward in support of the bill applied for by the corporation swore that the bargain then sought to be made was a most economical one. It had turned out that they were totally wrong, and that the committee of Parliament were right in kicking out the bill. The object of the present movement was to get rid of the liabilities which members had incurred in relation to the former one. This year the gas company paid no dividend. What security was there that matters would not be in a worse position that day six months? An old proverb said that "a new broom sweeps clean." Let the new directors show that the company could be worked to advantage, and then he would be amongst the first to support such a proposition as the present. Last year there was no dividend, and they should wait till they saw the result of another year's operations. He thought nothing could be more reasonable than Mr. Dennehy's proposition.

Mr. ROCHFORD opposed the motion. He thought the corporation were exceeding their duties. They were wrong in undertaking the management of gas-works.

Dr. OWENS thought they should not be in a hurry in rushing into this matter.

Mr. FRENCH said the bill of last session cost the corporation £2500. He supposed they would be surprised when he told them that it cost £1000 to bring over the two engineers who came here from England to look at the works.

After some further conversation, the amendment was put and negatived. The debate on the original motion having been resumed,

Mr. DENNEHY expressed his belief that when this question came before the citizens to be considered, their verdict would be that of the House of Commons when they kicked out the bill.

Sir JOHN GRAY said that 10 per cent. was the nominal value of each share; but the statement in the sworn testimony of the engineers was that the property was worth a million and a half.

Mr. DENNEHY: Which was not believed by the committee.

Sir JOHN GRAY said an honourable member was undertaking to tell them the mind of the committee. It was not that at all, but because the bill was not brought before them in such a form as to show an agreement. The corporation did not propose to carry out an agreement; and the committee said that, there being no agreement, they could not make one. A question would shortly arise as to what was to be done as to the lighting of the city. The Board of Trade had postponed the consideration of the question whether the company should be allowed to raise the price of gas. They declined to enter upon it until after the new directory had been appointed. There was a proposition that the public should have a large increase of price or a diminution of light, because of the excessive price of commodities used in the manufacture of gas. Either of those things could be done. There must be darkness, an increased price, or lesser illuminating quality.

Mr. DOCKRELL did not wish it to go before the public that darkness would be the result of rejecting this resolution. As long as the shareholders were able to supply gas there was a public contract under an Act of Parliament, and until the year 1877 the public could not be in darkness.

Mr. FRENCH said Sir John Gray's speech was calculated to lead the public astray.

Sir JOHN GRAY said the Legislature had given power to the Board of Trade to make any alterations that they thought fit, in order to secure certain returns for investments in gas companies. That power might be exercised to the prejudice of the corporation and the citizens.

Mr. DENNEHY said the Board of Trade had no power beyond that of preventing the dividend from exceeding 5 per cent.

Sir JOHN GRAY said they had power to alter arrangements so as to give 5 per cent. to the shareholders. It would be better that the corporation should have the property in their hands, so that any alteration might be made to result either in a reduction of the price of gas to the citizens or a reduction of taxation. This preliminary resolution should be passed in order to give the citizens an opportunity of declaring their opinions.

Mr. FRENCH said he was struck forcibly by the circumstance of two of the most active directors of the gas company coming in to saddle the citizens. It looked very bad before the public. Mr. Norwood in his presence consulted Sir John Gray when the requisition for this meeting was being hawked about.

Sir JOHN GRAY: You are mistaken. He did not consult me.

Mr. FRENCH: I saw him.

Mr. NORWOOD: I deny that I consulted Sir John Gray or anybody else. I said I would not ask Sir John Gray to sign it because he was a shareholder, nor Mr. Brooks because he was going to be made a director of the company.

Mr. FRENCH: When that requisition was hawked about by Mr. Norwood on Saturday last, I say he did consult Sir John Gray. He never moves here without consulting Sir John Gray.

Sir JOHN GRAY: I again give that the most explicit denial that any words in the English language are capable of conveying.

Mr. FRENCH said Sir John Gray, with all his cleverness, would not get him into a hole; but he maintained that for the shareholders to come there and vote for their own interest was not right, and it was illegal too.

Sir JOHN GRAY said that the object of the resolution was simply to allow the citizens to take up a position and go on with the bill if they chose. In a month hence they would have an opportunity of expressing their opinion one way or another. He would vote for the motion, because it was intended to give the citizens an opportunity of expressing their opinion as to whether they would like to have the gas-works under their own management or that of the gas company.

After some further discussion,

Mr. VEREKER proposed that the following addendum be made to the motion of Mr. Norwood:—"That no member of this house shall be qualified to sit on the committee now appointed who is a shareholder in the gas company, or otherwise interested, no matter how remotely, in the purchase of the gas company's works, or who shall not prove that they are not in any way connected with it."

This addendum was agreed to by Mr. NORWOOD and Sir JOHN GRAY, and the resolution (with this addition) was passed by a majority of 17 to 5.

METROPOLIS GAS SUPPLY.

PADDINGTON PUBLIC LIGHTING.

INTRODUCTION OF THE AVERAGE METER SYSTEM.

We stated a few weeks ago that the vestry of Paddington, having decided that the gas to the street-lamps in the parish should be supplied by meter, had made an application to the referees, under sec. 48 of the Imperial Gas Act, 1869, "to prescribe and certify the mode of ascertaining the quantity of gas so consumed."

The referees, in reply to this application, state that "they have collected extensive data as to the modes of measurement adopted in various towns; they have visited some of these towns to make personal examination of the arrangements, have tried many experiments, and have given careful attention to the communications they have received on the subject from both the parish and the Imperial Gas Company; and they have recorded their opinions and recommendations in a notification which they have sent to the vestry. The referees state that they have every confidence that the system therein prescribed will accomplish what the parish desires—namely, the purchase of the gas by measurement—in a convenient way, and with justice to both parties."

The following is the notification referred to:—

APPLICATION OF METERS TO PUBLIC LAMPS.—Whereas, the vestry of the parish of Paddington have, under the powers of sec. 48 of the Imperial Gas Act, 1869, required the Imperial Gas Company to supply gas to the public lamps in the parish by measurement, and have further required the referees to prescribe and certify from time to time the mode of ascertaining the quantity of gas consumed by the said public lamps. We, therefore, in compliance with this requisition, do prescribe and certify as follows:—

1. The gas shall be measured by a meter, to be attached to every twelfth public lamp;

and the average consumption of the whole of the lamps to which meters are attached, shall be taken to represent the average consumption of each public lamp supplied.

2. The meters shall be wet meters, of the best and most improved construction, and made by makers of acknowledged reputation.

3. The meters shall work when new with such friction that the excess of pressure on the inlet over that on the outlet shall not exceed one-tenth of an inch of water.

4. Each meter shall be placed in an iron box of suitable construction, and made water-tight by proper lids, to be let into the ground near the foot of the lamp-column.

5. Each lamp shall be furnished with a proper burner and governor of the best construction. The burners and governors shall be precisely similar in all the lamps, metered and unmetered. Each burner shall be so constructed as to burn such quantity of gas per hour as the parish shall determine, with the pressure hereinafter mentioned at the point of issue. The governor shall be so adjusted as to maintain this pressure, certainly and uniformly, under the usual variations of pressure in the mains.

6. The pressure at the point of issue of the burners shall, in default of any other amount being mutually agreed between the parties, be fixed at 5-10ths of an inch of water.

7. At intervals, not exceeding one year, every meter shall be taken out, examined, cleaned, tested as regards its friction, and put in order if necessary. Testings may also be made for the friction, *in situ* (by proper apparatus, contrived for the purpose) at more frequent intervals, at the option and at the expense of the company. If at any time the friction of a meter shall be found to exceed 0·15 inch of water, the meter shall be at once taken out and readjusted, so as to reduce the friction to the normal amount of 0·10.

8. Every governor shall be taken down, and retested, and if necessary readjusted, and put thoroughly in order, at least once a year.

9. The arrangements for lighting and extinguishing the lamps, and for the repair of the posts and lanterns, must be settled mutually between the parties.

10. It would appear from sec. 84 of the Act that the maintenance and repair of the meters fall legally on the parish; but we recommend that, although the cost of such maintenance, &c., may still be chargeable to them, the actual care of the meters, governors, burners, and other apparatus in immediate connexion with the gas, be vested by arrangement in the company, subject to inspection on the part of the parish.

11. The situation of the metered lamps, and the provision and fixing of all meters, governors, and other apparatus required under the new system, must be arranged to the satisfaction of both parties.

12. The register of each meter shall be read and recorded at regular intervals by two officers going round together, one on behalf of the company, the other on behalf of the parish; and their joint record shall determine the data from which the average consumption is to be calculated. This record shall be taken during the first year, monthly, and afterwards at such intervals as the parties shall agree on, but not less frequently than once a quarter.

13. If, on any official reading, the record of any meter shall vary more than 20 per cent. from the quantity that ought to be consumed, the record of that meter shall be omitted in taking the average, and the whole apparatus connected with that lamp shall be at once thoroughly examined, in order to detect and rectify what is wrong.

14. The parish shall appoint a competent inspector to supervise on their behalf the whole of the arrangements and management of the public lamps, and notice shall be given to him beforehand by the company of any examinations, testings, and other operations which it may be their province to do, in order that he may have the opportunity of being present at the same.

15. In the event of any disputes or differences arising between the parish and the company as to any matters or things connected with the arrangements of the meter system (except such as are provided for by sec. 74 of the Act), such disputes or differences shall be referred to an arbitrator to be agreed on between the parties, or, failing such agreement, to be nominated by the gas referees for the time being. He shall investigate such disputes or differences, and shall decide thereon; his decision shall be binding on both parties, and his charges shall be paid as he may award.

16. The referees being required to prescribe and certify the mode of measurement "from time to time," it shall be competent for either party, at any time after the system has been in full operation for one year, to make a further application to the gas referees for the time being, who will thereupon examine into the working of the system, and order any modifications therein which they may deem just and reasonable.

(Signed) WILLIAM POLE,
A. VERNON HARCOURT, Gas Referees.

Dr. Stevenson's report on the quality of the gas supplied in St. Pancras during the months of August and September states that the maximum observed illuminating power of the gas supplied by the Imperial Company at the testing station, 10, Edward Street, was 15·5 standard sperm candles, the minimum 13·7 candles, and the average 14·6 candles. The illuminating power was about a quarter of a candle better than during the month of July last. Of impurities, ammonia was always present in small quantities, though never in excess, whilst sulphuretted hydrogen was never detected. Sulphur in various forms was present to the extent of 21·70 grains per 100 cubic feet.

BRITISH GASLIGHT COMPANY, LIMITED.—The half-yearly meeting was held in London on the 24th ult., when a dividend at the rate of 10 per cent. per annum was declared, free of income-tax.

DISCOUNTS TO LARGE CONSUMERS OF GAS.—The Leeds Town Council, on Wednesday last, received and adopted a report from the Gas Committee, in which they stated that they did not deem it advisable to discontinue to allow discounts on gas accounts, or to make any alteration in the present scale.

ADVANCES IN THE PRICE OF GAS.—The Wigan Gas Company have announced a rise from 3s. 6d. to 3s. 10d. for gas supplied in the town and within a mile radius of their works, and from 4s. 7d. to 4s. 11d. outside the town and one mile radius. The Ormskirk Company have made an advance, from the 1st inst., to 6s. per 10:0 cubic feet in the town; and in Aughton, Burscough, and Lathom to 6s. 3d.; subject to a discount of 3d. per 1000 cubic feet on payment within four weeks after delivery of account. At Salisbury there has been an increase to 4s. 10d. The Dumblane Gas Committee have added 1s. 10d. to the price in their district.

TESTIMONIAL TO MR. ROBERT GOOD.—The directors of the Carshalton Gas and Coke Company have passed the following resolution, which was communicated to Mr. Good at their meeting on the 23rd ulto.:—"We, the directors of the above company, have great pleasure and satisfaction in testifying to Mr. Robert Good, our manager, our high appreciation of the zeal and ability he has exhibited in originating and carrying out, without professional aid, our newly erected works, and as a more substantial mark of our high opinion of the same, we beg to present him with a purse of 60 guineas, and a record of the resolution engraven on vellum."

MUNICIPAL CORPORATIONS (BOROUGH FUNDS) ACT.—At a meeting of the Dublin Corporation last week, the following notice of motion was given by Councillor French:—"That the Chief Secretary for Ireland be requested to introduce and promote a bill in Parliament to extend to Ireland so much of the provisions of the 35th & 36th Vic., c. 91, as enacts that no payment to any member of the governing body of a borough or town for acting as counsel or agent in promoting or opposing any bill or bills in Parliament promoted or opposed by such governing body shall be charged on the funds administered by such body."

EXPLOSIONS OF GAS.—On Sunday night, Sept. 28, a serious accident occurred at Launceston. A strong smell of gas being perceived in three adjoining houses, gasmen were sent for, who dug a pit in the road, above what was presumed to be a fracture of the main. One of the men incautiously applied a light, when instantly a high flame leaped up from the road, and terrific explosions were heard in each of the three houses mentioned. The fire brigade was summoned, but the only fire was in the road. Within the houses the effects were disastrous. Almost every room was divested of flooring, gas having accumulated beneath the boards, furniture was scattered and shattered in fantastic positions, pictures were torn from walls, and ceilings torn down. Fortunately most of the occupants were absent, having been previously driven away by the smell, but the two who remained were forced along a passage and thrown down, but not much hurt. Examination shows the houses to have been loosened from their foundation and the walls cracked, so that for the present they are uninhabitable.—On Monday, the 29th, an explosion of gas occurred in the Western General Dispensary, Marylebone Road, London, while search was being made for an escape by the aid of a lighted candle. Several persons were seriously injured, and much injury was done to the premises.

TUXFORD (NOTTS) PUBLIC LIGHTING.—The Public Lighting Act having been adopted as a trial during the last three years in this town, a vestry meeting has just been held to consider whether or no the lighting should be continued, the gas company peremptorily refusing to continue the same upon the expired terms—namely, at a 3d. rate of the whole town, exclusive of land—the company asserting that they had been losers by the transaction. The terms they now offer are £2 per lamp. After a long discussion the terms were accepted, the committee of inspection being empowered to reduce the number if a 4d. rate, unanimously agreed upon, did not produce sufficient funds to meet the increased charges.

BRIDLINGTON GAS COMPANY.—A meeting of several influential shareholders of this company was held at the Britannia Hotel, Bridlington Quay, on Friday, Sept. 26—Mr. J. Wentworth presiding. The chairman having stated the purport of the meeting—viz., to determine what course it was advisable to pursue in reference to the financial and general condition of the company, Mr. J. C. Archer, one of the auditors, gave a detailed statement of the affairs of the company, and called attention to the discrepancies and deficiencies in the accounts, and stated that the capital account had been exceeded by the sum of £778, assuming that every penny had been paid up. He also said a considerable deficiency existed in the revenue account. He next alluded to the circumstances attending the audit of 1872, and his inability to get any attention paid to the report he then made, and to the difficulties thrown in the auditor's way during the past few weeks. Mr. Cranswick endorsed the statement of Mr. Archer. Mr. Holiday moved—"That those present form themselves into a Gas Shareholders Protection Association." This was seconded by Mr. R. Dobson, who thought the company was fast going in a wrong direction. Mr. Cranswick observed that there was a daily loss of 15,000 cubic feet of gas, which clearly showed that a great change was necessary. The resolution was put, and carried unanimously.

GAS EXPLOSIONS ON SHIPBOARD.—An official inquiry, ordered by the Board of Trade, into the circumstances connected with the explosion on board the steamship *Berwick* from the Tyne for London, off Cromer, was resumed and concluded on the 27th ult., at the Greenwich Police Court, before Mr. Maude, the magistrate, and Admiral Powell and Mr. Darley, surveyor, assessors. Mr. C. J. Cottingham attended as counsel for the Board of Trade; and Mr. Crossman appeared for the owners (Usworth Colliery Company) and the master, Captain R. Brown, of the *Berwick*. After a great number of witnesses had been examined, Mr. Cottingham summed up the evidence for the Board of Trade, and observed that some facts of special importance had been elicited by the evidence. It was shown incontestably that the explosion was caused by what was termed methane or marsh gas, otherwise carburetted hydrogen, which, when exposed to the air and brought in contact with a naked light, would explode with great violence. It had transpired that a similar explosion had occurred on board this vessel in 1867, which was, no doubt, referable to the same cause. In the present instance the theory as to the casualty was fully borne out by the evidence. It had been shown that the explosion took place in the forecastle, or that part of it in immediate conjunction with the fore ballast tank. From that tank a pipe led aft into the bilge, and it had been shown that this particular gas would be emitted from a cargo of coals such as were stowed in the *Berwick*, and would force its way into the bilges, and, being lighter than atmospheric air, would make its way in any direction towards the atmosphere. The fore tank had thus become a reservoir for this gas. The pipe in question was furnished with a stop-cock, and had this cock been turned off the casualty would not have occurred. The learned counsel then dwelt upon the increasing frequency of casualties from this cause, instancing the case of the *Zeno* and others. There was evidently carelessness, and perhaps ignorance, in not guarding against the effects of this destructive agent. Coal ships, when not properly ventilated, were nothing but floating magazines, carrying death and destruction to every one on board. It would be for the court to say where the blame attached in the present instance, and whether it was due to the neglect of individuals or to the defect of a system. Mr. Crossman then addressed the court for the master and owners. He said it was clear that the explosion took place in the forecastle, but there was nothing in the evidence to show that the master was to blame for what had happened. His clients much regretted what had occurred. Their vessels had been carrying the coal for the last 25 years, and during that period there had been only three explosions. After the last one, in 1867, the owners gave directions that only Davy's lamps should be used on board; they also had coal ventilators fitted, and they were prepared to adopt anything that might in any way ensure the safety of those on board. He might add that his clients were also largely interested in the security of their own ships, and that they would only be too ready to adopt any plan that might lessen the possibility of explosion. Mr. Maude, the magistrate, said the court exonerated the master, Captain R. Brown, from blame in the matter, and returned him his certificate. With regard to the general judgment of the court, and any opinions or suggestions the court might have to make, a report would be sent to the Board of Trade, and would no doubt find publicity. According to news per the *Marzapore*, dated Gibraltar, September the 22nd, the steamer *Broomhaugh*, of Newcastle, bound from Newcastle to Port Said, with a cargo of coals, put into Gibraltar on the 21st, and landed five of the crew severely injured by an explosion which occurred in the forehold, on the 20th, about 100 miles north-west of Gibraltar. Three of the crew were blown up into the air, and disappeared, and another was killed on the deck. The five landed were conveyed to the hospital in a pitiable condition. The explosion was a most terrific one, and was caused by the want of ventilation. Part of the top-gallant yard was carried away, and on the remaining portion was found a part of the shirt of one of the unfortunate fellows thrown up. The steamer is seriously damaged.

BERLIN WATER-WORKS.—The German papers report the final resolutions of the Berlin Municipality for purchasing the property of the Berlin Water-Works Company. For this purpose a sum of 8,500,000 thalers is to be borrowed on loan from the Government Invalid Fund. In 1881 the municipality would have had the right of purchase for 4,500,000 thalers.

PERTH WATER COMMISSION.—From an abstract statement of the accounts of the Water Commission, just issued, it appears that the income from the 31st of August, 1872, to the 31st of August, 1873, is £4219 14s., and the expenditure is £4212 7s. 7½d., leaving £7 6s. 4½d in the hands of the treasurer. It is stated that the recent alterations at the works and connected with the filter-beds have incurred an expense amounting to about £400. The debt due by the commission on the 31st of August, 1873, was £2760 12s. 7½d., and on the 31st of August, 1872, £2800 16s. 10½d., showing a decrease of £40 4s. 3d.

DUBLIN (CORPORATION) WATER SUPPLY.—The return made by the engineers to the Dublin Corporation of the quantity of water sent into the outlying districts and into the city during the week ending the 24th of September last was as follows:—

Average quantity daily sent over Callow Hill weir	14,862,144 gallons.
Average per day sent into the townships	1,516,138 "
Average quantity of water sent into the city daily (accounted for)	7,168,668 "
Average quantity of water wasted daily	6,177,338 "

A special meeting of the corporation was held on the 26th ult., to consider a

notice of motion by Sir John Gray, M.P., for an application to Parliament for an Act to enable the corporation to obtain new powers in connexion with the water supply of the city. The powers sought for are the following:—1. To borrow and reborrow capital to enlarge works, to extend telegraph lines, and connect existing lines, and for other purposes of the Act, on the security of existing rates, amount to be borrowed not to exceed £50,000. 2. Further powers to diminish waste of water. 3. Power, at their discretion, either to stop extra quantity of water taken by the townships, or to charge the commissioners for the excess taken. 4. Power to apply out of the public water-rate an additional sum to the purposes of the fire brigade. 5. Power to define and alter the limits of the Act. 6. Compulsory powers to take land for the purposes of the Act. Sir John Gray, in proposing the motion, alluded to the great waste of water in Dublin, and stated that some time since the Water Works Committee called the attention of the council to the subject, when it was ascertained that on an average 9 million gallons per day were wasted. This was a monstrous waste of the water which had cost the citizens so much money. By the measures then taken, though neither stringent nor severe, the daily waste had been reduced by 3 million gallons, and they hoped, by the additional powers now sought for, for checking the waste, still further to reduce it without giving annoyance to the citizens or outside customers. The quantity of water to be supplied to each township was 20 gallons per day per head of the population as shown by the census returns, and they wanted to have power either to limit the supply to that quantity, or arrange for payment for any excess. With reference to the prevention of fire, he stated that the new powers asked for would enable the committee to greatly increase the efficiency of the brigade. Originally the committee were entitled to devote 1½d. of the 3d. public water-rate to the purposes of the brigade, but at the expiration of ten years it was to be reduced to 1d. That reduction had now been made, and the consequence was that the committee were obliged to reduce the number of the brigade by six men, leaving only 24, a number inadequate to meet emergencies that might arise, and hence a great deal of loss and mischief might be occasioned to the citizens. He was able to state, on the authority of insurance companies, that the class of fires with suspicious features was practically at an end in Dublin, by the efficiency of the brigade, either in preventing the burning or discovering the origin of the fires. With the powers given by the proposed Act the committee would be in a position to restore the brigade to its proper strength, giving every confidence to the citizens that their lives and property would be adequately protected from fire. The motion was adopted, and the law agent of the corporation was instructed to take the necessary steps for the promotion of a bill to carry out the object. It was also further resolved that the Water-Works Committee be requested to furnish a full account of the state of their department, giving information with respect to their contracts with the townships, their borrowing powers, the revenue and expenditure, present and prospective, and the means at present at their disposal—the statement to be prepared and presented to each member of the council at least three days before the previous resolution came up for confirmation.

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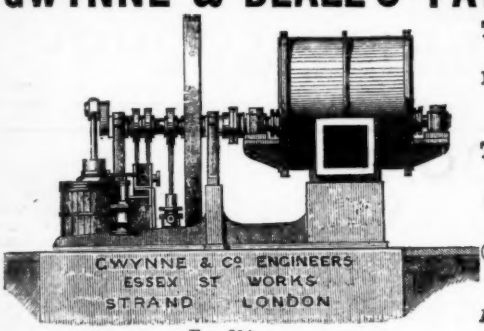

FIG. 224.

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FIG. 225.

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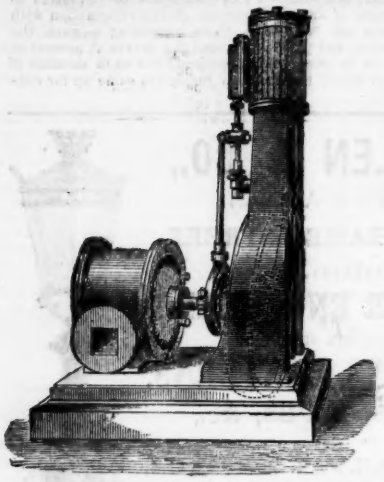

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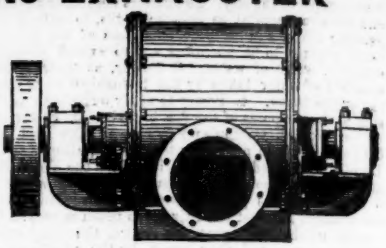

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THE Directors of the above Company are ready to receive APPLICATIONS from owners of existing Gas-Works, as well as from others erecting or about to erect new works, and to grant Licences for the use of the Patents.

Apply to the SECRETARY, 22, WALBROOK, E.C.

THE Directors of the Rochester, Chatham, and Strood Gaslight Company are prepared to receive TENDERS for the purchase of their surplus TAR and AMMONIACAL LIQUOR for the year 1874 (1st of January to the 31st of December). The Tar and Liquor can be delivered into tank barges at the works, at Rochester, and at Gillingham, on the Medway.

Tenders may be for the Tar and Liquor separately or together.

Further particulars may be known by application to the Secretary, at the Office, 56, High Street, Rochester.

Tenders must be at the Office, as above, not later than noon of Thursday, the 30th of October inst.

The Directors reserve the right to reject any or the whole of the tenders.

By order,

Rochester, Oct. 6, 1873. WILLIAM SYMS, Secretary.

CAMBRIDGE UNIVERSITY AND TOWN GAS-LIGHT COMPANY.

TENDERS FOR GAS COAL.

THE Directors of the Cambridge University and Town Gaslight Company are desirous of receiving TENDERS for the supply of from 2000 to 3000 tons of GAS COAL, the whole to be delivered, in such quantities as may be required and directed by the Gas Company, in trucks on to the Company's siding adjoining the Great Eastern Railway, Coldham's Lane, Cambridge.

The coal is to be the best of its kind, and as free as possible from sulphur, bats, refuse, and dirt. Payment to be made monthly so long as the contract shall be duly fulfilled.

Sealed tenders, specifying the description of coal and the pits at which it will be raised, to be sent to the Gas Company's Office on or before Wednesday, the 15th of October, stating price per ton of 20 cwts., subject to the conditions aforesaid.

The respective contracting parties will be required to execute an agreement, to be prepared by and to the satisfaction of the Solicitor of the Company.

By order of the Directors,

Oct. 2, 1873. W. WOOD, Manager.

In the press, and will shortly be published,

THE GAS CONSUMER'S MANUAL;

OR,

How to obtain Good Light and Cheap Gas.

Being a Popular Exposition of the Chemistry of Gas Lighting, with Practical Instructions in the best methods of burning Gas for Lighting, Cooking, and Heating: and Suggestions as to the proper Sizes of Interior Pipes, Arrangement of Lights, &c., &c.

ILLUSTRATED.

ALSO,

ON SETTING AND WORKING RETORTS.

A Revised and Illustrated Reprint of a Paper read at the Annual Meeting of the British Association of Gas Managers in 1870.

By E. S. CATHELS, Assoc. Inst. C.E., Montreal, Canada.

SCARBOROUGH GAS-WORKS.

CONTRACT No. 1.

THE Directors of the Scarborough Gas Company are prepared to receive TENDERS for the erection of all the BUILDINGS required upon their new manufacturing station, and for the construction of Two GASHOLDER-TANKS and other works.

The drawings and specification may be seen, and forms of tender, with bills of quantities, may be obtained, on payment of Two guineas each (which will be returned to persons tendering in accordance with instructions), on application at the Office of the Company, in Scarborough, or at the Offices of Mr. G. W. Stevenson, Engineer, 19, Great George Street, Westminster, on and after Thursday, the 2nd of October, and sealed tenders must be sent in to me, endorsed "Tender for Buildings, &c.," on or before the 13th day of October next.

The Directors do not bind themselves to accept the lowest or any tender.

By order of the Directors,

JAMES MOON, Manager and Secretary of the Company.

Scarborough, Sept. 17, 1873.

THE Scarborough Gas Company, owing to the removal of their works, will have FOR SALE, about October, 1874, the following APPARATUS, the whole of which is in exceedingly good condition:—

Fittings for 140 Retorts, consisting of mouthpieces, ascension, saddle, and dip pipes, and hydraulic and foul mains.

A Condenser, consisting of 40 12-in. pipes, with top and bottom boxes, and inlet, outlet, and bye-pass valves.

Two Scrubbers, each 7 ft. diameter and 16 ft. high, with valves as before.

Two Purifiers, 8 ft. 6 in. square and 5 ft. deep, 20-in. water lutes.

Two Cast-iron Water-Tanks, respectively 24 ft. by 16 ft. by 4 ft., and 20 ft. by 8 ft. by 4 ft. New in 1865.

Two Horizontal Engines, 4 h. p., two single-flue Cornish boilers, and two 20,000 feet per hour Beale's Exhausters. All new in 1866.

One Station-Meter, by Milne, 20,000 feet per hour. New in 1864.

One Gasholder 80 ft. diameter, in two 24-ft. lifts. About 11 years old.

One Gasholder 50 ft. diameter, in two 22-ft. lifts. Only 4 years old.

Two Governors, by Parkinson, on 12-in. and 10-in. mains.

A considerable length of 10-in. Cast-iron Socket and other Pipes.

An inspection of the above Apparatus is requested by the Officers of Companies requiring enlargements or extensions, and offers to purchase will be duly considered.

By order of the Board,

JAMES MOON,

Manager and Secretary to the Company.

TAR AND LIQUOR.

THE Gas-Works Committee of the Widnes Local Board are prepared to receive TENDERS for the surplus TAR and AMMONIACAL LIQUOR to be produced at their Gas-Works, Widnes, for a period of One year, from the 1st of October next.

The Tar and Liquor will be delivered on rails at Widnes.

Forms of tenders, with other particulars, may be obtained on application to the undersigned, at the Gas-Works, Widnes.

Tenders to be addressed to the Chairman of the Gas-Works Committee, endorsed "Tender for Tar," or "Liquor," as the case may be, and to be delivered at the Gas-Works, Widnes, on or before the 11th of October next.

N.B.—Tenders other than on the prescribed form will not be accepted, and the Board do not bind themselves to accept any tender.

T. A. DREW, Engineer and Manager.

Gas-Works, Widnes, Sept. 20, 1873.

Mr. ALFRED LASS,

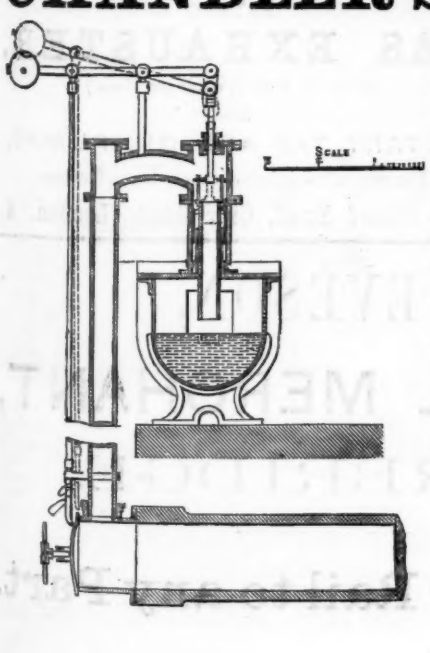
60, CORNHILL, LONDON, E.C.,

Is prepared to open the Books, and, if necessary, keep the Accounts of Gas and Water Companies.

To examine the Books and Accounts, and prepare Balance-Sheets for the information of Directors.

To assist Secretaries in preparing Balance-Sheets, according to the "Gas-Works Clauses Act, 1871;" or may be consulted with respect to Accounts generally.

CHANDLER'S PATENT DIP-PIPE.



It is well known by all Gas Managers that back pressure upon the retorts greatly retards the production of gas, causing a deposit of carbon which keeps steadily accumulating. Such carbon reduces the capacity of the retorts, requires extra fuel for heating, and has to be frequently removed by heavy iron bars, which very much injure the retorts. By the use of Chandler's Patent Dip all these evils are entirely remedied. When the retorts are being drawn and charged, the Dip-Pipe is sealed in the fluid of the hydraulic main. As soon as the lids are replaced, the Dip is raised completely out of the fluid, and the gas passes unrestricted to the holders. By running the exhauster to a level gauge, ALL PRESSURE IS REMOVED FROM THE RETORTS. The consequence is that there is no deposit of carbon, no need of scurfing, no extra fuel is required, a large saving of wear and tear and loss of time is effected, and a greatly increased production of gas per ton of coal is realized.

The following testimonial letter has been received from the manager of the Erith Gas-Works:—

Messrs. Chandler and Sons.

Gentlemen,—I beg to inform you that during last week I carbonized 18 tons 5 cwt. of Ravensworth Pelaw Coal in a single setting of retorts fitted with your Patent Dip-Pipes, and obtained a yield of 195,800 feet of gas, equal to 10,730 feet per ton, which is a considerably greater yield than I have been able to obtain before using your Dip. The single retort fitted with your Patent Dip, which has now been in use here upwards of four months, has been throughout, and is now, quite free from carbon.

I am, gentlemen, &c.,

Erith Gas-Works, Aug. 2, 1873. (Signed) D. VINCENT, Manager.

For terms of use and cost, apply only to the Patentees,

Messrs. CHANDLER & SONS, ENGINEERS AND CONTRACTORS,

YORK STREET, LONDON ROAD, SOUTHWARK, LONDON, S.E.

BAHIA GAS COMPANY, LIMITED.—NOTICE is hereby given that the ORDINARY HALF-YEARLY GENERAL MEETING of this Company will be held at the Offices of the Company, 10, Coleman Street, London, on TUESDAY, the 21st day of October, 1873, to receive the Report of the Directors, the Balance-Sheet approved by the Auditors, and for general purposes.

The chair will be taken at Three o'clock precisely.

By order of the Board,

Oct. 1, 1873. ALFRED J. HEAD, Secretary.

THE GEORGETOWN (BRITISH GUIANA) GAS COMPANY, LIMITED.—Incorporated by Special Ordinance.—NOTICE is hereby given that the ORDINARY HALF-YEARLY MEETING of the SHAREHOLDERS of the above Company will be held at the Offices of the Company, No. 60, Cornhill, in the City of London, on TUESDAY, the 28th day of October inst., at Three o'clock in the afternoon precisely, to receive the Report and the Accounts of the Company for the half year ending the 30th of June last, to declare a Dividend, and to transact the general Business of the Company; and at such meeting a resolution will be submitted, authorizing and approving the Directors to exercise the borrowing powers of the Company to the amount sanctioned by the Company's ordinance.

The Transfer Books will be closed from the 15th to the 28th inst., both inclusive.—By order of the Board,

ALFRED LASS, Secretary.

Offices, 60, Cornhill, London, Oct. 1, 1873.

BOROUGH OF BARROW-IN-FURNESS.

GAS AND WATER DEPARTMENT.

CONTRACT FOR GAS COALS, &c.

THE Gas and Water Committee invite TENDERS for the supply of about 6000 tons of CANNEL and GAS COAL, to be delivered at their works, in such quantities and at such stated periods as may be required during the six months ending June 30, or twelve months ending Dec. 31, 1874.

The contract will be subject to an arrangement as to variation in colliers wages.

RESIDUAL PRODUCTS.

TENDERS are also invited for the sur-plus RESIDUAL PRODUCTS at their works, for One or more years, commencing the 1st of January next, comprising Gas Tar and Ammoniacal Liquor.

The quantity of each will be about 60,000 gallons per annum.

Particulars may be obtained on application to Mr. J. Lewis, Manager.

Sealed tenders, addressed, "The Chairman of the Gas and Water Committee," and endorsed, to be sent in to me not later than Oct. 24, 1873.

C. F. PRESTON, Town-Clerk.

Municipal Offices, Oct. 3, 1873.

Demy 16mo., Sixty-four pages,

ADVANTAGES of GAS. By J. O. N. RUTTER. A new edition.—201st Thousand. Brighton: Published by the Author.

This little book is intended for distribution by Gas Companies and the manufacturers of gas apparatus. It has done good in making known the benefits and promoting the sale of gas; and it is hoped that its usefulness might be continued and greatly extended.

Prices:—1000 copies, £3; 500 copies, £4 5s.; 250 copies, £2 5s. Any smaller number at 20s. per 100 copies.

A specimen copy free per post for three penny stamps. Covers printed specially.

Apply to J. O. N. RUTTER, Black Rock, BRIGHTON.

Nov. 13, 1871.

SAMUEL PONTIFEX, Consulting Gas Engineer, having retired from the Great Central Gas Company, is now prepared to furnish PLANS and SPECIFICATIONS, as well as ADVISE Provincial Gas Companies as to the erection of new, or alteration and enlargement of existing works.

Offices: 22, Coleman Street, LONDON, E.C.

REMOVAL.

MR. ALFRED PENNY, C.E., begs to give notice that he has REMOVED his Offices from the Wenlock Iron-Works to No. 20, ABINGDON STREET, WESTMINSTER, where he may be consulted as usual on all matters connected with Gas-Works, Water-Works, and Drainage, both for England and Abroad.

MR. WILLIAM DORE (19 years Gas Engineer and Accountant) may be CONSULTED upon all matters relating to the manufacture and distribution of gas, and the management, accounts, or transfer of gas undertakings.

Office, 4, Picton Place, Neath, SOUTH WALES.

THE "TAMAR" FIRE-BRICK AND CLAY COMPANY, LIMITED, invite attention to their FIRE-BRICKS, which are now in use by a number of the leading firms of Lime and Cement Manufacturers, Gas Companies, &c., &c., and are pronounced equal to the best Stourbridge.

For particulars and prices, apply to the SECRETARY, 5, Great Winchester Street Buildings, LONDON, E.C.

Sept. 24, 1873.

TO GAS COMPANIES.

GEORGE McKAIG,

MANUFACTURER OF

GAS-PURIFYING WOOD SIEVES,

153, CLEVELAND STREET,

DONCASTER.

It requires but one trial to prove the Superior Make, Strength, and Durability of these Sieves.

FIRE-CLAY RETORTS.

WILLIAM FRASER,

INVERKEITHING,

(Owner of the Works at which Fire-Clay Retorts were first made), can supply

RETORTS, FIRE-BRICKS, &c.,

to any extent.

References can be given to managers of above a hundred Gas-Works whom he supplies.

He ships at Charlestown his

CELEBRATED HALBEATH STEAM COALS,

on Navy List.

This day is published, price One Shilling,

GAS PURIFICATION IN LONDON,

INCLUDING A COMPLETE SOLUTION OF

THE "SULPHUR QUESTION."

BY R. H. PATTERSON,

LATE METROPOLITAN GAS REFEREE.

Author of "The Economy of Capital;" "The Gas and Water Supply of London," &c.

WM. BLACKWOOD & SONS, EDINBURGH AND LONDON.

ALFRED WILLIAMS,

PHŒNIX FIRE-BRICK WHARF,

64, BANKSIDE, SOUTHWARK, LONDON, S.E.

GAS ENGINEER AND CONTRACTOR FOR THE ERECTION OF GAS-WORKS, AND FOR THE

SUPPLY OF RETORTS, FIRE-BRICKS, CAST-IRON MAINS,

AND ALL MATERIALS FOR GAS MANUFACTURE AND DISTRIBUTION.

THE THAMES BANK IRON COMPANY,

(Successors to LYNCH WHITE,)

SUPPLY FROM STOCK

CAST-IRON RETORTS, SOCKET-PIPES for GAS or WATER PURPOSES, FLANGE-PIPES for STEAM, RAIN-WATER PIPES and GUTTERS, HOT-WATER PIPES and BOILERS, and all requisite Connexions for same; also LAMP-COLUMNS, LAMPS, WROUGHT FRAMES, WROUGHT-IRON TUBING, &c., &c.

All kinds of Gas-Works Apparatus and General Castings made to Pattern or Drawing.

ADDRESS—

OLD BARGE WHARF, UPPER GROUND STREET, LONDON, S.E.

TO GAS COMPANIES, ENGINEERS, CONTRACTORS, AND OTHERS.

GEORGE NEWTON,

UNION STREET WEST, OLDHAM,

BRASS FOUNDER AND FINISHER,

MANUFACTURER OF

IMPROVED WET AND DRY CONSUMERS GAS-METERS,

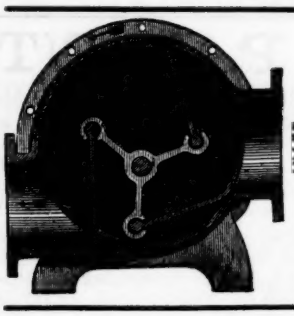
LAMP METERS AND BOXES,

GOVERNORS, GAUGES, INDICATORS, EXHAUST & PRESSURE REGISTERS,

GAS STATION-METERS,

With all the joints planed.

TERMS, &c., ON APPLICATION.



CHARLES HORSLEY'S

PATENT

GAS EXHAUSTER.

(From 250 Feet upwards per Hour.)

Also,

ROTARY TAR AND OIL PUMPS.

For particulars and prices apply to the Patentee,

22, Wharf Road, City Road, London, N.

G. J. EVESON,

GAS COAL MERCHANT,

STOURBRIDGE.

Delivery per Rail to any Part.

J. & J. BRADDOCK,

GAS ENGINEERS,

GLOBE METER-WORKS, OLDHAM,

MANUFACTURERS OF

IMPROVED CONSUMERS GAS-METERS,

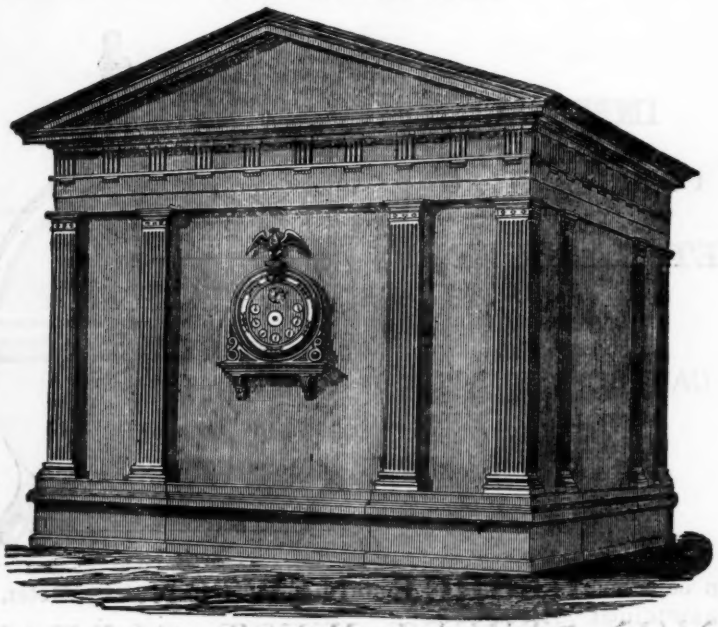
Of the best material and workmanship, carefully adjusted to the requirements of the British Sales of Gas Act and Foreign Standards of Measures.

PATENT FIXED WATER-LINE GAS-METERS,

Which are uniform with the ordinary Meters, and register with minute accuracy.

IMPROVED DRY GAS-METERS,

IN BEST TINNED IRON CASES.



GAS STATION-METERS,

WITH PLANED JOINTS.

GOVERNORS, GAUGES, INDICATORS, EXHAUST-GOVERNORS, &c.

Home and Foreign Orders promptly attended to.

All Sizes of CONSUMERS METERS, STATION-METERS, and GOVERNORS generally in Stock.

Orders almost invariably despatched on the day of receipt.

TERMS, &c., ON APPLICATION.

SAM. CUTLER & SONS,

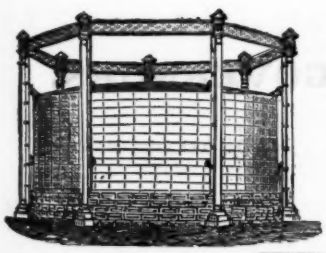
CONTRACTING GAS ENGINEERS,

GASHOLDER & GENERAL GAS APPARATUS MAKERS,

MANUFACTURERS OF

BOILERS, IRON ROOFING, IRON BRIDGES,

AND GENERAL IRONWORK.



S. C. AND SONS undertake Contracts of any magnitude for the Erection of new and Remodelling of existing Gas-Works, for Gasholders, Cast and Wrought Iron Tanks, Iron Roofs, and every description of Apparatus for the Manufacture and Distribution of Gas.

Special attention is invited to their "Improved Condenser," which is very effective, and much approved; also to their patterns of Annular and other Condensers, Scrubbers, and Purifiers, of all sizes, which they arrange either with Centre or Ordinary Slide Valves.

WORKS FOR THE SUPPLY OF

VILLAGES, MANSIONS, FACTORIES, &c.

S. C. AND SONS undertake the Supply and Laying of Mains for Gas and Water, and supply all Castings, Connexions, and Fittings for Retort-House, Works generally, and for Streets. They also supply Valves of all descriptions, Iron and Clay Retorts, Hotpressed Retort-Lids, Steel Charging-Scoops of improved make, for which they have special machinery, Improved Coke and Coal Barrows, Cross-Bars and Screws, Bolts and Nuts, Furnace and Stoking Tools, Iron and Wood Purifier-Sieves, Lead, Yarn, Borings, &c., including every requisite whatsoever for a Gas-Work, a well-assorted stock being kept of those goods most in request.

SOLE MAKERS OF BRETT'S PATENT COKE BARROW.

Experienced Retort Setters sent to any part of the Kingdom.

Address: PROVIDENCE IRON-WORKS, MILLWALL, LONDON.

B. CARPENTER'S

IMPROVED WOOD SIEVES

FOR

GAS PURIFIERS & SCRUBBERS.

WORKS:

22, HERMES STREET, PENTONVILLE ROAD,

LONDON, N.

The above Sieves are used by all the Gas Companies in London and a great many in the country. Their utility, durability, and cheapness combined, render them superior to all others.

Testimonials from Gas Engineers who have tested their qualities forwarded on application.

All orders punctually attended to, and estimates given if required.

INTERNATIONAL EXHIBITION, 1862.

CLASS X.

PRIZE MEDAL

For excellence of Fire-Clay Gas Retorts, and

"HONOURABLE MENTION" for

good quality of Fire-Bricks.

WILLIAM STEPHENSON & SONS,

THROCKLEY,

NEWCASTLE-ON-TYNE.

BRONNER'S PATENT GAS-BURNERS give 99 per cent. of light, as compared with 27 per cent. given by ordinary burners, with equal consumption of gas.—*Vide* "Gas Referees Report," published June, 1869.

HENRY GREENE AND SON, Sole Consignees of Brönner's Patent Improvements in Gas Lighting, 16 and 17, King William Street, LONDON, E.C.

BELGIAN CLAY RETORTS.

J. SUGG and CO., late ALBERT KELLER, GHENT.—The removal of the import duties on Earthenware permitting the entry of Clay Retorts into England, Messrs. Sugg, of Ghent, beg to draw the attention of the Gas Companies of London, and other Cities, to the very superior quality of the RETORTS manufactured by them. They can be made of any size, in one piece, and of any form. The price will be in proportion to the weight, and very moderate in comparison to their value.

Communications addressed to J. SUGG & Co., GHENT, will receive immediate attention.

CATHELS & TERRACE'S Patent Four-WAY DISC GAS-VALVE is the simplest and best Valve for Purifiers, and as a By-pass for other apparatus in Gas-Works. It is always gas-tight, and has no springs, ground faces, or other delicate parts. By its use the flow of the gas cannot be accidentally stopped, and it never sticks.

For prices, &c., apply to the Manufacturers, Messrs. GUEST AND CHRIMES, Foundry and Brass Works, ROTHERHAM.

CATHELS'S Patent District Dry Gas-GOVERNOR is the only perfect self-acting contrivance for Regulating the Pressures in the higher levels of a district.

For prices, &c., apply to the Manufacturers, Messrs. GUEST AND CHRIMES, ROTHERHAM.

ADDISON POTTER,

WILLINGTON QUAY,

NEAR NEWCASTLE-UPON-TYNE,

Manufacturer of Clay Retorts, Fire-Bricks and every description of Fire-Clay Goods.

CLAYTON'S PATENT SIX-WAY VALVE only requires one valve to work two purifiers; saves more than three-fourths of the connexion-pipes; requires neither tees, elbows, nor bends; no racks or springs to get out of order.

For particulars, apply to CLAYTON, SON, & Co., Gas Engineers, Hunslet, LEEDS.

TO GAS COMPANIES, ENGINEERS, &c.

WOOD SIEVES.—WOOD SIEVES.

Estimates given and Contracts taken by the Manufacturer

GEORGE MACKANESS,

36, EDWARD STREET, HAMPSTEAD ROAD,

LONDON, N.W.

These Sieves are made with parallel or bevel bar, and guaranteed to be well seasoned yellow deal, and not common spruce so generally used.

N.B.—Specimens sent free on application.

JAMES OAKES & CO.,

ALFRETON IRON-WORKS, DERBYSHIRE,

AND

WENLOCK IRON WHARF, 20 & 22, WHARF ROAD,

CITY ROAD, LONDON, N.,

Beg to inform Gas and Water Companies and the public, that they keep in stock in London all the CASTINGS in general use in Gas and Water Works, including Iron Retorts, Socket and Flange Pipes, Bends, Branches, and Syphons of all sizes, Lamp Columns, &c., &c.

N.B.—Orders for Cast-Iron Tanks, Girders, Columns, Cylinders, and all irregular castings, will have immediate attention. CHARLES HORSLEY, Agent.

ALEXANDER F. PAINTER,

CONTRACTING ENGINEER

FOR

GAS & WATER WORKS,

GREAT BERKHAMPSTEAD, HERTS.

Foreign Orders carefully executed. Provincial Gas-Works designed and erected. Extensions of Works carried out with despatch. Mains supplied and promptly laid. Public and Private Buildings fitted up. Gasholders, Purifier Covers, and all Sheet Ironwork. Wrought Ironwork to drawing.

Specifications, Estimates, and Tenders given.

GAS-WORKS LEASED.

THE IMPERIAL METER COMPANY, LIMITED,

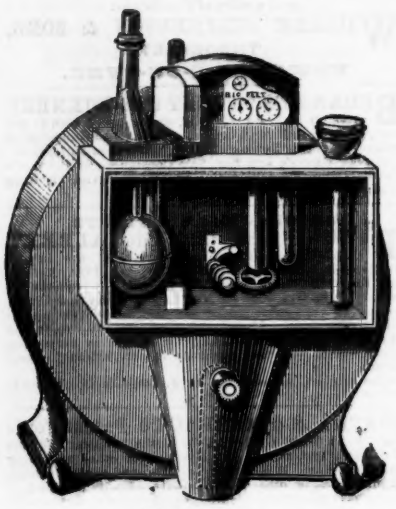
MANUFACTURERS OF

WET AND DRY GAS-METERS,

PRESSURE-GAUGES AND GOVERNORS, AND STREET-LAMP REGULATORS.

FACTORIES:

KING'S ROAD, LONDON, N.W., and GRAY'S INN ROAD, LONDON, W.C.



Front View.

THE

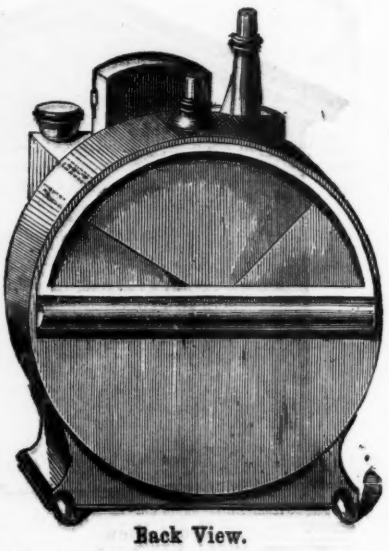
IMPERIAL

COMPENSATING

WET GAS-METER.

DE CASTRO & BURTON'S

PATENT.



Back View.

I. This Meter is more simple in construction than the common non-compensating Meter.
II. An unvarying water-line is maintained.
III. No amount or kind of pressure will cause it to "flood."
IV. It is practically unaffected by "tilting."
V. The friction is less than in any other Meter; and
VI. It will last for twelve months without requiring to be refilled.

THE IMPERIAL METER COMPANY, LIMITED, ALSO MANUFACTURE COMMON NON-COMPENSATING WET GAS-METERS OF ALL SIZES, BOTH IN TIN AND CAST-IRON CASES.

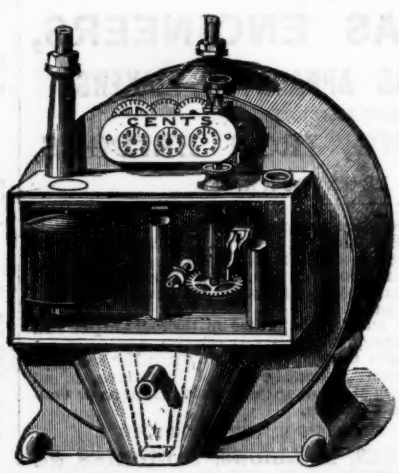
THE COMPENSATING

WET GAS-METER

IS UPHELD FOR

TEN YEARS

WITHOUT CHARGE.



THE IMPERIAL WET GAS-METER.
Non-Compensator.

STATION-METERS

WITH PLANED JOINTS,

AND

GOVERNORS,

MADE TO ORDER.

Mr. GEORGE MACKANESS will represent this Company in the Provinces.

OFFICES: 41, FLEET STREET, LONDON, E.C.

W. MOORE, Secretary.

All Communications to be addressed to the Secretary.

THE IMPERIAL METER COMPANY, LIMITED,

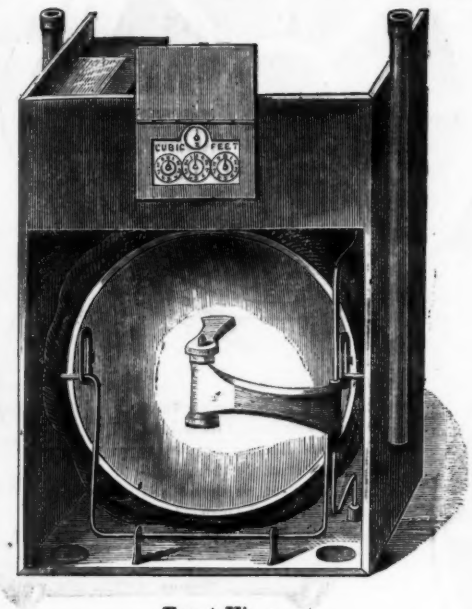
MANUFACTURERS OF

WET AND DRY GAS-METERS,

PRESSURE-GAUGES AND GOVERNORS, AND STREET-LAMP REGULATORS.

FACTORIES:

KING'S ROAD, LONDON, N.W., and GRAY'S INN ROAD, LONDON, W.C.



Front View.

THE

IMPERIAL

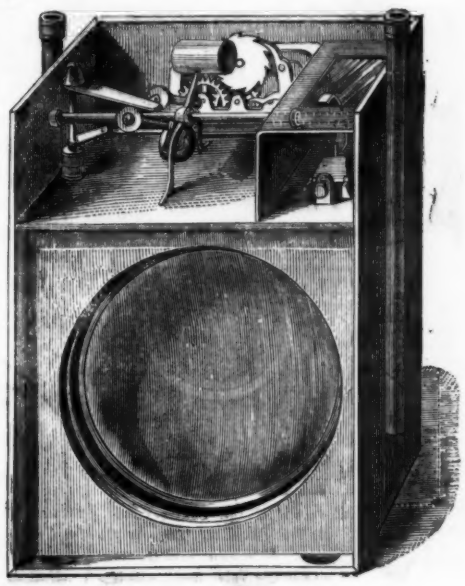
DRY

GAS-METER

SINGLE DIAPHRAGM.

TELLING & JOHNSON'S

PATENT.



Back View.

I. The mechanical construction of this Meter is simpler and stronger than any other.
II. About half as much leather is used as in ordinary dry Meters.
III. The Meter has only one valve, and this cannot "stick."
IV. The lights maintain perfect steadiness and strength of flame. There is no "draw."
V. The gas consumed can only be measured from the inlet to the outlet, and
VI. The index cannot be made to register backwards.

THE IMPERIAL METER COMPANY, LIMITED, ALSO MANUFACTURE ORDINARY DOUBLE DIAPHRAGM DRY GAS-METERS OF ALL SIZES, BOTH IN TIN AND IN CAST-IRON CASES.

SPECIAL ATTENTION

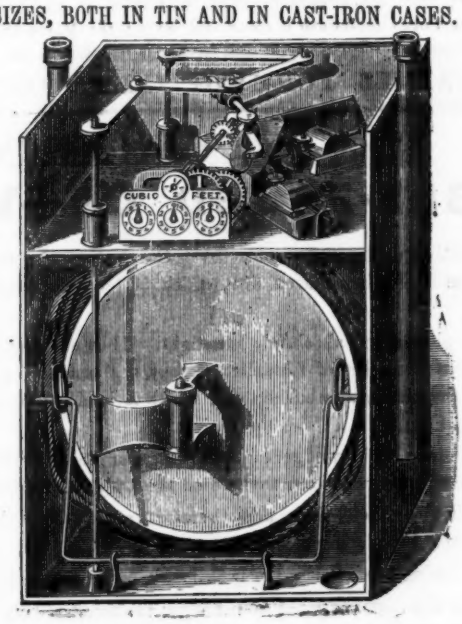
IS PAID TO THE

MANUFACTURE OF

STREET-LAMPS

AND

REGULATORS.



EVERY

DRY GAS-METER

IS UPHELD FOR

SIX YEARS

WITHOUT CHARGE.

THE IMPERIAL DRY GAS-METER.
Double Diaphragm.

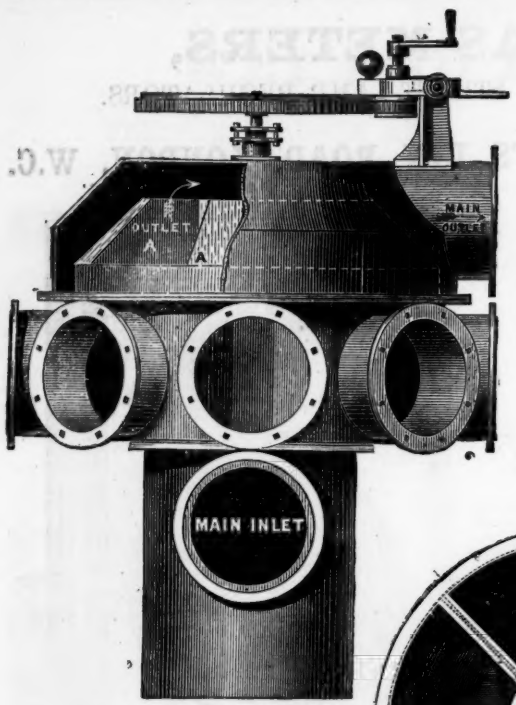
Mr. GEORGE MACKANESS will represent this Company in the Provinces.

OFFICES: 41, FLEET STREET, LONDON, E.C.

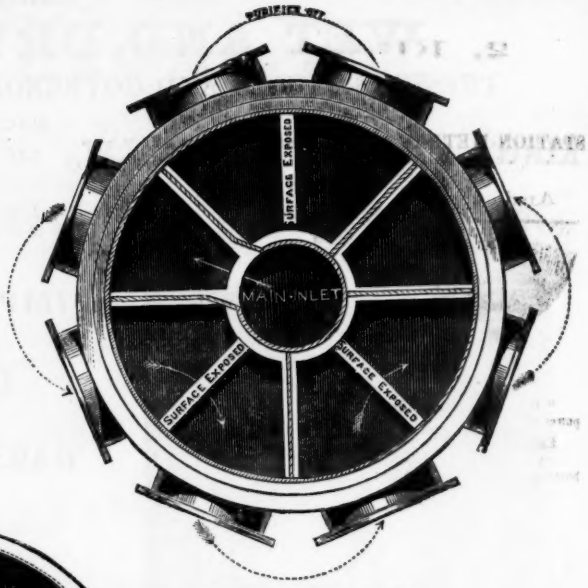
W. MOORE, Secretary.

☞ *All Communications to be addressed to the Secretary.*

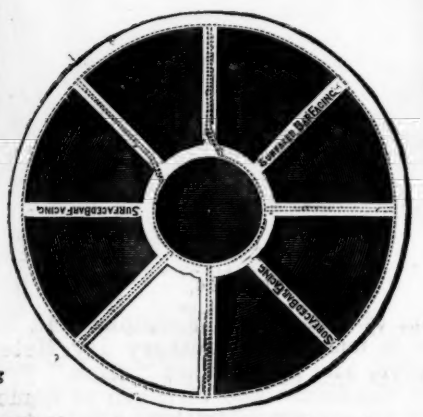
C. & W. WALKERS' PATENT CENTRE-VALVES.



Elevation of the Centre-Valve for four Purifiers. The safety cover is shown broken, to enable the Valve itself, which is inside, to be seen.



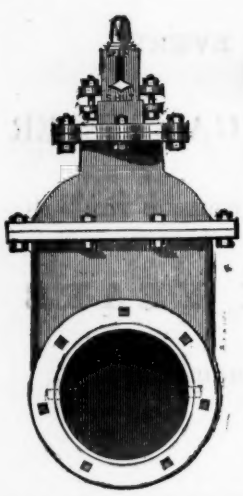
Plan of the Body, showing the Valve lying in it, with three of the facings, which were formerly exposed to settlements of dirt, carbon, naphthaline, &c., but which are now always covered by the surfaced bar-facings of the Valve. (See below.)



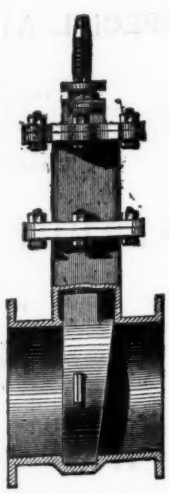
Plan of the Valve, or upper portion, showing the surfaced bar-facings referred to above.

These PATENT CENTRE-VALVES are the most perfect and certain means for working Purifiers. The Valve itself is protected from all injury inside the safety cover. The working of the Valve is so easy, and so governed by the stop-catch movement, that the Purifiers can be instantaneously changed in the dark as well as in daylight. They are scraped perfectly true, metal to metal, the facings heretofore exposed are always covered, and there is nothing more reliable, certain, and durable in a gas-works. By their use the floor of the Purifying-house is clear and level; the Valve and all connexions being beneath the floor, out of the way of working. A very considerable improvement and saving is effected in the cost of the connecting-pipes.

FOUR-WAY CENTRE-VALVES FORMING INLET, OUTLET, AND BYE-PASS.



C. & W. WALKERS'
DOUBLE-FACED GAS-VALVES.



These solidly constructed double-faced Gas-Valves are superseding the old system of the light, single-faced disc, which is too uncertain and unreliable in large bores.

They are guaranteed absolutely gas-tight. They are very massive and rigid, and by improved modes of manufacture they are produced at very little excess in cost over the old light, weak system, which is liable to spring and bend, and become leaky.

The Valve is a rigid wedge of solid cast iron, having two perfectly scraped surfaced facings fitting between the two on the body, which are also surfaced.

A spring in two short halves, and, therefore, not liable to break, is used only for scraping the front facing clean.

The front facing is vertical; the back facing forms the wedge.

At a slight additional expense both flanges are faced to bolt to main-pipes.

GASHOLDERS, TELESCOPE & SINGLE-LIFT, of LARGEST DIMENSIONS.

PURIFIERS, SCRUBBERS, CONDENSERS of most Improved Description.

WOOD SIEVES FOR PURIFIERS,

Which have now been in use for more than ten years, and their advantages and durability fully established. They are made entirely by steam machinery in very large quantities at the most moderate cost.

MIDLAND IRON-WORKS, DONNINGTON, near NEWPORT, SHROPSHIRE; 8, FINSBURY CIRCUS, LONDON.

JAMES MILNE & SON,

GAS ENGINEERS,

Gas-Meter, Gas Apparatus, and Gas-Fittings Manufacturers,

EDINBURGH, AND

2, KING EDWARD STREET,

NEWGATE STREET, LONDON.

STATION-METERS, GOVERNORS, CONSUMERS METERS, GAS LUSTRES, CHANDELIERS, BRACKETS, &c.,

And every description of Gas-Fittings and Gas Apparatus.

SCHOLL'S

PATENT PLATINUM

GASLIGHT PERFECTER.

Extract from Report by Dr. Letheby:—

"The results have been very remarkable, for they show an average increase of 63 per cent. on the illuminating power of the gas. I am of opinion, therefore, that the invention is of great practical value."

Extract from Dr. Frankland's Course of Lectures at the Royal School of Mines, February, 1868.

"Scholl's Platinum Perfecter is one of the most important inventions of modern times in connexion with the burning of coal gas."

Price 1s. each for Fishtail Burners.

To be had retail of Gas-Fitters and Ironmongers.

JOHN SCHOLL, Manufactory: 41 & 42, BERWICK STREET;

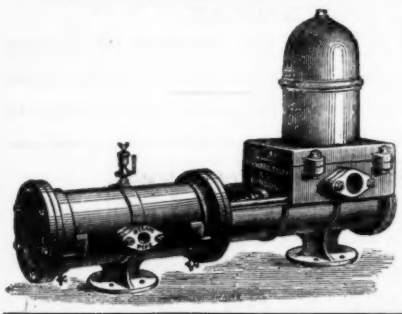
Retail Depot: 198a, OXFORD STREET, LONDON, W.

Terms on application. N.B.—A specimen sent free on receipt of Twelve stamps.

*** Further testimonials from Drs. Frankland and Crooks, showing the great practical value of this invention, will be shortly published.

THE PATENT

"UNIVERSAL" STEAM PUMP.



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IN USE IN SOME OF

THE PRINCIPAL GAS-WORKS IN LONDON, SHEFFIELD, PENISTONE, &c.,

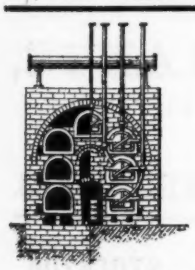
FOR

TAR AND AMMONIACAL LIQUORS.

Ardwick Bridge Chemical Works, Manchester, Oct. 28, 1872.

Sir,—The "Universal" Steam Pump obtained from you, and which has been employed during the last six months pumping caustic soda at these works, still continues working satisfactorily.—Yours truly,

(Signed) PETER HART, *Manager.*



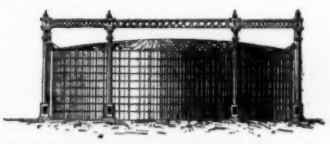
HENRY SKOINES,

PATENTEE

AND

CONTRACTING GAS ENGINEER,

FOR



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Of any extent, at Home or Abroad,

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BAILEY'S Patented Inventions are now in extensive use wherever steam is known. Bailey's Patent Steam Gauges, Pyrometers, Water Gauge Cocks, Test Pumps, Fusible Plugs, Steam and Water Valves, Safety Valves, Junction Valves, Pumps, Tell-Tales, Recorders, Lightning Conductors, Electric Telegraphs, Turret Clocks, Steam Joint Cement, Lifting Jacks, Boiler Feeders, Lime Catcher and Separator, Injectors and Ejectors, and every description of first-class Brass Work for Engines and Boilers. Gas-Works Managers who have not our large book should send for it.

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SOLE AGENT FOR

EDGE'S PATENT

FOR REMOVING THE

CARBONACEOUS INCRUSTATION FROM GAS-RETORTS.

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RENOWNED

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MADE BY MACHINERY

CAPABLE OF MAKING 10,000 FEET WEEKLY.

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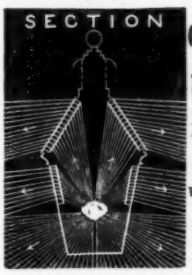

THE PATENT

CATOPTRIC LAMP

for Streets and all Situations where the Light ascending above the level of the Lamp is wasted,

Is now in use in Moorgate St., London, and has been in successful operation upon Waterloo Bridge since Oct. 7, 1871.

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INVENTOR AND PATENTEE.

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SUPPLIED BY

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Same quality as supplied by us to several of the most extensive Gas Companies, and which has given entire satisfaction.
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HOPKINS, GILKES, & CO.,
LIMITED,
MIDDLESBOROUGH,
SUPPLY GAS & WATER PIPES of EVERY SIZE.
Plain, Turned and Bored, and Coated.
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Castings for Gas-Works of every description.
EXHAUSTERS.
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Manufactory for every description of Casting and Machinery for Gas-Works and Water-Works.
Warehouse in London for Cast-Iron Pipes and Connexions of all sizes and in any quantity, Scott's Wharf, Bankside, Southwark.
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FIRE CLAY & BRICK WORKS,
STOURBRIDGE.
Manufacturers of GAS-RETORTS, GLASS-HOUSE FURNACE & BLAST-FURNACE BRICKS, LUMPS, TILES, and every description of FIRE-BRICK.
Proprietors of
BEST GLASS-HOUSE POT and CRUCIBLE CLAYS.
Successors to
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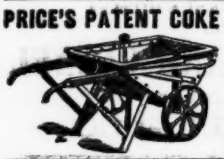
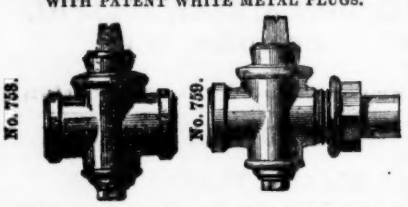
PIPES, VALVES, IRON ROOFS,
WROUGHT AND CAST IRON GIRDERS.
DESIGNS, SPECIFICATIONS, & ESTIMATES FURNISHED.

PRICE'S PATENT COKE & COAL BARROW,

effecting a great saving of time, labour, and expense.
For particulars, price, &c., apply to Mr. E. PRICE, Inventor and Patentee, Gas-Works, Hampton Wick, MIDDLESEX.

LAMBERT'S
CAST-IRON GAS-MAIN COCKS,
WITH PATENT WHITE METAL PLUGS.


The bodies of these Taps are made of Iron, black or galvanized, and the Plugs of Patent Metal. They are warranted not to set fast or corrode as do iron or brass Cocks, will always work easily, are strong, well made, durable, of little or no intrinsic value, and, therefore, not likely to be stolen; and the PRICES are (especially upon the larger sizes) FULLY 50 PER CENT. LESS THAN BRASS COCKS.
GAS-JOINTS, CHANDELIERS, PENDANTS, BRACKETS, ETC.;
WROUGHT-IRON WELDED TUBE AND FITTINGS,
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Stocks, Taps, and Dies, and Every Description of Gas-Fitters Tools; Gas Slide and Sluice Valves;
CARTER'S SAFETY GAS-VALVES;
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Pattern-Book and Price List of Gas-Fittings, supplied on application.
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ESTABLISHED 1844.

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"For Improved Construction, Excellence of Material, and Superior Workmanship;"
TWO GRAND GOLD MEDALS AT THE MOSCOW INTERNATIONAL EXHIBITION, 1872;
ALSO THE FIRST PRIZE MEDALS AT LEEDS AND LYONS IN 1858, 1868, and 1872.
"REDUCTION IN PRICES OF PEET'S VALVES, consequent upon largely increased sales."
ILLUSTRATED CATALOGUES AND ESTIMATES ON APPLICATION.
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Samples of Specialties may be inspected at Stand No. 542, Group XIII., in the English Machinery Annexe of the Vienna Exhibition, 1873. For List of same see German Official and "British Section" Catalogues.

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MR. ANDERSON advises Companies on all matters connected with the manufacture of Gas and the construction of Works.
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RETORT SETTINGS, heated by tar without the production of smoke.
STEAM-ENGINES and EXHAUSTERS, separately or combined.
FOUR-WAY VALVES, one of which is equal to three ordinary Valves.
STATION GOVERNORS—the Gasholder cannot tilt and cause accident.
BREEZE AND TAR FUEL MACHINE.
A Pamphlet containing Eighteen Illustrations of the foregoing, with letterpress on the construction of Works, post free, 2s. 6d.
N.B.—The second edition of this Work, *now ready*, contains illustrations of the Machine for converting Breeze and Tar into Fuel for heating the Retorts.
"The Author is well qualified to speak authoritatively upon the important subjects to which his pamphlet refers."—*Artizan.*

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GAS COAL MERCHANTS,
107, PICCADILLY, MANCHESTER.
ALL CLASSES OF
ENGLISH, SCOTCH, & WELSH CANNEL COALS.

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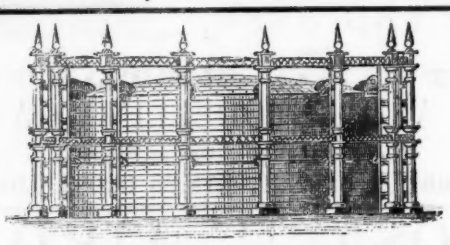
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ASHMORE & WHILE,
GAS ENGINEERS & CONTRACTORS,
MANUFACTURERS OF GASHOLDERS,
GAS APPARATUS OF EVERY DESCRIPTION,
Including Improved
Retort-Lids, Boilers, Cast and Wrought Iron Tanks, Iron Roofing, Bridges, Girders,
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N.B.—Estimates for all Gas Plant and Remodelling supplied on application.

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MANUFACTURERS OF CRYSTAL GLASS CHANDELIERS,

WALL LIGHTS, AND LUSTRES FOR GAS AND CANDLES.

TABLE GLASS OF ALL KINDS.

CHANDELIERS IN BRONZE AND ORMOLU. MODERATOR LAMPS.

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CONSUMERS WET & DRY GAS-METERS ON THE MOST APPROVED PRINCIPLES.

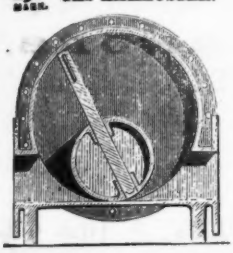
STATION-METERS, GOVERNORS, PRESSURE-REGISTERS,

And every Description of Gas Apparatus.

GAS, STEAM, AND WATER FITTINGS.

TRADE MARK.

J. BEALE'S PATENT GAS EXHAUSTER.



BEALE'S CONTINUOUSLY ACTING

GAS EXHAUSTERS

ARE NOW MANUFACTURED BY

B. DONKIN & CO.

MR. J. BEALE, of East Greenwich, having retired from business, has made an arrangement with B. DONKIN & CO. for the sole manufacture of his Patent Solid-Slide Gas Exhausters.

B. D. & Co. also make Steam-Engines to drive Gas Exhausters direct or otherwise.

Estimates and Prices on application to

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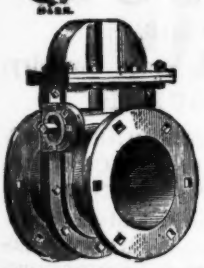
ENGINEERS & IRONFOUNDERS,

BERMONDSEY, LONDON, S.E.

B. DONKIN & CO.'S IMPROVED GAS-VALVES

TRADE MARK.



WITH WROUGHT-IRON PINIONS,

List of prices, with full dimensions of all sizes up to 48-inch, to be had on application.

These Valves are all proved on both sides to 30 lbs. on the square inch before leaving the works, and are always kept in stock.

VALVES MADE WITH OUTSIDE RACKS TO ORDER.

ALSO,

SCREW WATER-VALVES WITH GUN-METAL FACES.

B. DONKIN & CO.,

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MAKERS OF STEAM-ENGINES,

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LONDON, S.E.

TO GAS COMPANIES AND THE TRADE.

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MANUFACTURERS OF

CRYSTAL, BRONZED, & ORMOLU CHANDELIERS, IMPROVED CRYSTAL STAR & SUN LIGHTS, VESTIBULE LAMPS, AND THE PATENT CRYSTAL ILLUMINATION.

A LARGE STOCK ALWAYS IN HAND OF

IRON, BRASS, COMPOSITE, AND LEAD TUBES, FOR GAS AND WATER,

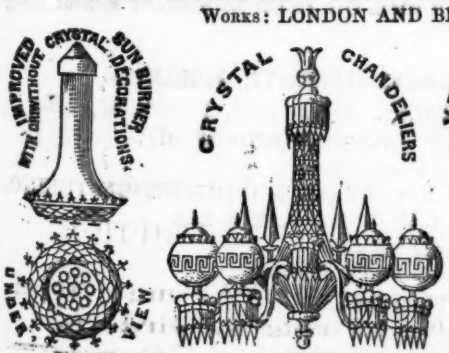
AND EVERY DESCRIPTION OF

GAS AND WATER FITTINGS.

THE PATENT DRY AND WET METER, WITH THE LATEST IMPROVEMENTS.

STREET LAMPS AND COLUMNS IN GREAT VARIETY.

WORKS: LONDON AND BIRMINGHAM.



GAS MOONS,

Cut and Engraved, of the newest designs;

GAS REFLECTORS

In Silver and Glass;

GAS NIBS

AND

BURNERS

Of every description.

Pattern-Books of Gas-Fittings, Crystal and Ormolu Chandeliers for 1873, are now complete.

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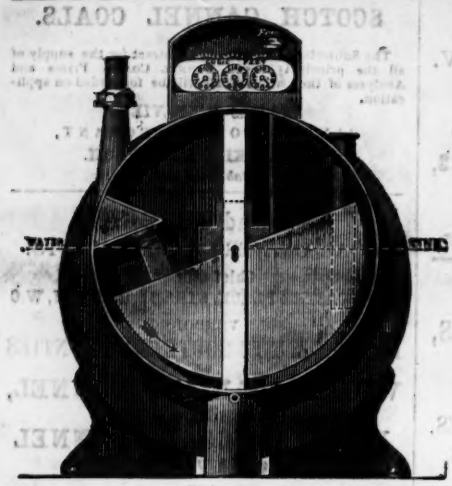

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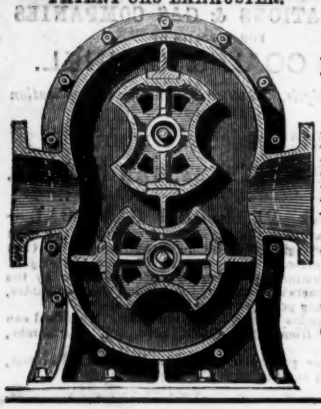

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